

‘Of the Expence of Defence’: What Has Changed Since Adam Smith?

by Jurgen Brauer*

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**Hull College of Business, Augusta University, Augusta, USA; EBA Program, Faculty of Economics, Chulalongkorn University, Bangkok, Thailand; Co-editor, The Economics of Peace and Security Journal*

Email: brauer.jurgen@gmail.com

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Abstract: This essay selectively reviews the history of economic thought on war and peace, starting with Adam Smith. Today, Smith’s trickle of thoughts has become a broad marshland. In this marshland, however, discrete currents are apparent—some stronger, some weaker—which this essay identifies, in rough chronological order, as war, defense, conflict, military, security, and peace economics. As these terms often are used interchangeably, one purpose of the essay is to more clearly delineate these intellectual currents and differentiate them from each other. By building canals in the marshlands as it were, the aim is to help all flows of contributions become stronger.

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‘Of the Expence of Defence’: What’s Changed Since Adam Smith?

This essay selectively reviews the history of economic thought on war and peace, starting with Adam Smith. Today, Smith’s trickle of thoughts has become a broad marshland through which various currents move, some stronger, some weaker. No unified river has as yet emerged and, indeed, may never emerge. Some currents may cease to flow, some may meander, overlap, merge with, and diverge from others—at least for a time—and yet others may flow invisibly underground only to emerge in future. In this marshland, however, discrete currents are apparent which this essay identifies—in rough chronological order—as war, defense, conflict, military, security, and peace economics.

The purpose of this essay is three-fold. The labels just listed often are used interchangeably, and thus one purpose is to point to substantive differences that exist in the subject matter covered, the approach used, or the general orientation taken and to encourage practitioners of the crafts to label their contributions accordingly. Building canals in the marshlands, as it were, ultimately may help all flows of contributions to become stronger. Second, in an age where at the majority of colleges and universities the study of the history of economic thought no longer is an undergraduate or graduate degree requirement, it is perhaps of value to have at hand a small guide to the development of the various fields treated in this essay. This may help students focus their interests and readings.¹ Third, for the further development (and proper indexing and bibliographic cataloguing) of literature and textbooks that consolidate knowledge in a field, it will be helpful to obtain a more clearly delineated understanding of the subject matter within each.²

The essay is structured as follows. It first summarizes Adam Smith’s classic chapter and then devotes one section each to war, defense, conflict, military, security, and peace economics. The final section concludes the narrative. This is followed by an Appendix on the current indexing of economic literature of the subject matters and the bibliographic cataloguing of four relevant textbooks.

1. Adam Smith

In 1776, Adam Smith wrote “Of the Expence of Defence” in *The Wealth of Nations* (Book 5, Chapter 1, Part 1). He opens by stating that “The first duty of the sovereign, that of protecting the society from the violence and invasion of other independent societies, can be performed only by means of a military force. But the expence both of preparing this military force in time of peace, and of employing it in time of war, is very different in the different states of society, in the different periods of improvement.”³ Smith then provides thumbnail surveys of societies of ever

increasing economic complexity—societies of hunters, shepherds, husbandmen (i.e., free tenant farmers or owners of small-scale lands), and agricultural societies. Only the last of these might require a minor expense, for so long as a season of war “begins after seed-time and ends before harvest ... nature does herself the greater part of the work which remains to be done” so that incomes should be little affected. In societies more advanced than that, however, “two different causes contribute to render it altogether impossible that they who take the field should maintain themselves at their own expence. Those two causes are, the progress of manufactures, and the improvement in the art of war.” When “an artificer, a smith, a carpenter, or a weaver, for example, quits his workhouse, the sole source of his revenue is completely dried up. Nature does nothing for him,” wherefore income lost during time of war would need to be replaced by the public or the sovereign, the more so when campaigns exceed episodic skirmishes or battles and are drawn out over extended periods of time, even “perhaps the greater part of the year.”

Division of labor into specialized employment implied that the number of people who could be fielded as soldiers would be held in check by the remaining non-soldiers, as “the number of the former can never exceed what the latter can maintain.” Less advanced societies might field 20 or 25 percent of their people, Smith writes, but “among civilized nations of modern Europe” perhaps not more than one percent “in any country can be employed as soldiers without ruin to the country which pays the expences of their service.” Similarly, while less advanced societies could and would sport general training facilities in preparation for the eventuality of warfare—the Roman *campus martius* and the Greek *gymnasium*, for instance—“the trade of a soldier was not a separate, distinct trade, which constituted the sole or principal occupation of a particular class of citizens.” Since the art of war required ever-increasing perfection, it thus also required “that it should become the sole or principal occupation of a particular class of citizens.” Importantly, only the state could create this class. This was so because a private citizen “who, in time of profound peace, and without any particular encouragement from the public, should spend the greater part of his time in military exercises, might, no doubt, both improve himself very much in them, and amuse himself very well; but he certainly would not promote his own interest. It is the wisdom of the state only which can render it for his interest to give up the greater part of his time to this peculiar occupation.”

An industrious, productive, and advanced nation—one that accumulates wealth and has but a small percentage of its population under arms—is liable to attack, Smith argues, and for the state to make “any tolerable provision for the public defence” in these circumstances but two methods are available. One is to “enforce the practice of military

exercises, and oblige either all the citizens of the military age, or a certain number of them, to join in some measure the trade of a soldier to whatever other trade or profession they may happen to carry on.” The other is that “by maintaining and employing a certain number of citizens in the constant practice of military exercises, [the state] may render the trade of a soldier a particular trade, separate and distinct from all others.” Smith calls these methods “the militia” method and “the standing army” method, respectively. The differences between them stem from the regularity of the exercise, the regimentation of the force, and the trained “habit of ready obedience” to officers. Militia forces have a temporary and atomistic quality about them and they may, or may not, follow the natural leaders of the various militia bands. In contrast, a standing army is permanent in structure, is marked out by a characteristic unity of its force, and its officers are appointed authority figures to whom instant obedience is owed. A standing army is a multi-celled organism more than it is a collection of individuals.

Smith illustrates “the irresistible superiority which a well-regulated standing army has over a militia” by pointing to the example of Philip of Macedon and, later, to the rise of Rome. Having conquered all the lands in its ambit, in Rome “the civil came to predominate over the military character, and the standing armies of Rome gradually degenerated into a corrupt, neglected, and undisciplined militia,” prey for more disciplined militias. Time and again Smith employs the phrases “well-exercised,” “well-disciplined,” and “well-regulated” as necessary attributes of gaining and maintaining superiority of force. Militia “went gradually to ruin,” and “when the expedient of a standing army ... had once been adopted by one civilized nation, it became necessary that all its neighbours should follow their example.” Such an army “can best be maintained by an opulent and civilized nation,” Smith writes, and “it is only by means of a standing army, therefore, that the civilization of any country can be perpetuated, or even preserved for any considerable time.”⁴

From defense, Smith turns to the opportunity for offense, both externally and internally. “As it is only by means of a well-regulated standing army that a civilized country can be defended, so it is only by means of it that a barbarous country can be suddenly and tolerably civilized.” Externally, a standing army thus is “an irresistible force” that establishes “the law of the sovereign through the remotest provinces of the empire ...” But it can be “dangerous to liberty” internally when the interest of its leaders “are not necessarily connected with the support of the constitution of the state.” Yet if the interest of its leaders does coincide with those of the state, a standing army “may in some cases be favourable to liberty, [for] the security which it gives to the sovereign renders unnecessary that

troublesome jealousy, which, in some modern republics, seems to watch over the minutest actions, and to be at all times ready to disturb the peace of every citizen.” Indeed, even in cases where “liberty approaches to licentiousness,” the more the sovereign is “secured by a well-regulated standing army,” the less does public safety require that he “should be trusted with any discretionary power for suppressing even the impertinent wantonness of this licentious liberty.”

Smith wraps up his reflections by returning to the theme of the expense of defense. A standing army costs more than a militia. A standing army must be maintained both in war and in peace. A standing army requires specialized implements of war which with the advance of industry become ever more dear. Firearms occasion more expense than bows for unlike a bow’s arrows, a gun’s powder (ammunition) is “lost irrecoverably” when used, hence costly. And heavy cannon demand greater expense to prepare and to carry to field. Moreover, an *enemy* thus prepared requires additional expense to shore up one’s own fortifications.

No expert today would say that Smith covered all the bases. (To be fair, few of our numbers today would likely have bested Smith’s breadth and depth of analysis, or elegance of language, in 1776 either.) His analysis derives from the fundamental tenet of the *Wealth of Nations* as the whole: the division of labor and the attendant improvements in productivity and wealth that specialization and exchange bring. Smith suggests the dual themes that while growing wealth affords the opportunity (and need) to build a standing army, that army in turn requires an expense with which to secure that wealth. A standing army, he writes, is a route to nation- and empire-building through military strength. Yet he also warns that when the interest of the standing army dissociates from that of the sovereign, internal upheaval may be at hand. Conversely, however, internal upheaval may be repressed when the interests of sovereign and generals do align. Indeed, the power of the standing army may be so great, and the sovereign so secure, that some measure of internal dissent can be tolerated without ill effect on the nation as a whole.

To bring such a force into being is costly, and over time increasingly so. In addition to soldiers’ opportunity cost of foregone production in civilian employment, the advancement of the mechanical arts creates new weaponry, new requirements in training, staffing, organization, and logistics, and new needs for homeland fortification. These, in turn, function as spurs to ever-greater economic advancement to defray the growing expense of defense. In his final paragraph, Smith concludes that “In modern war the great expence of fire-arms gives an evident advantage to the nation which can best afford that expence, and consequently to an opulent and civilized over a poor and barbarous

nation. In ancient times the opulent and civilized found it difficult to defend themselves against the poor and barbarous nations. In modern times the poor and barbarous find it difficult to defend themselves against the opulent and civilized. The invention of fire-arms, an invention which at first sight appears to be so pernicious, is certainly favourable both to the permanency and to the extension of civilization.”

Smith covered a lot of ground and nearly a quarter of a millennium post-Smith one wonders what, if anything, has changed since Adam Smith? Clearly, for example, the modern experience of war in Afghanistan belie the “evident advantage [of] an opulent and civilized over a poor and barbarous nation.”

2. The pre-1960s: (Trade) War Economics

In 1776, Napoleon was but a seven-year-old boy and the American Revolution still a work-in-progress. The war of 1812 in the American colonies was as yet to come, as was the collapse of all the other European dominions in the New World. For Smith, the Franco-Prussian war of 1870–1871 lay nearly a century into the future. A world war—let alone two of them—was unthinkable. And massive wars to effect the (near) end of imperialism and colonialism worldwide still lay some two hundred years and more into the future.

Smith merely meant to understand how defense, offense, and economy might be entwined in social organisms in which states assume high roles as providers of public services necessary for a system based on private sector *laissez-faire* to function well. In this he was joined by a long list of subsequent giants of economic thought such as Jean-Baptiste Say (1803) in France, Eugen Böhm-Bawerk and other prominent members of the Austrian School (on which see Kjar and Anderson, 2010; Westley, Anderson, and Kjar, 2011; and Anderson, Kjar, and Yohe, 2012), Knut Wicksell (1898) in Sweden, and a bevy of Anglophone economists such as James Mill (1808), John Stuart Mill (1848), Francis Ysidro Edgeworth (1915a, 1915b, 1918, 1919), Arthur Cecil Pigou (1916, 1921), John Maynard Keynes (1920, 1922), and Lionel Robbins (1939, 1947). All wrote extensively on matters of agriculture, industry, and war; of war finance, debt, and inflation; of war-affected trade and financial institutions; and of post-war economic reconversion, reconstruction, and restitution. In this, war *per se* rarely was their main concern. Instead, it was the economic dislocations prompted by war that led to deep theoretical debates on trade, money, inflation, business cycles, and the proper role of the state. For the most part, *war economics was trade economics* or, more to the point still, *tradeoff economics*. Prominent nonacademic commentators such as Norman Angell (1909)—a British MP and eventual Nobel Peace Prize Laureate—and Francis Wrigley Hirst (1915)—the then-editor of *The Economist*

newspaper—joined them in the debates on trade, wealth, war, and peace.

Not only can war prompt economic dislocation but disputes over how an economy functions can lead to war. Following the publication of his successful *Theory of Moral Sentiments* (1759), Smith traveled for a few years in France, the seat of the Physiocrats' school of economic thought whose dispute with Mercantilists centered on the questions of the origin of economic value and wealth and of the role of cross-border trade. Smith sided with the Physiocrats and took their unrestricted trade arguments further in *The Wealth of Nations* (1776). Yet the role of trade remained disputed, and on the nexus of trade, war, and peace, Smith was followed by the likes of David Ricardo (1817), Friedrich List (1841), Gustav Schmoller (1900; 1904), Vladimir I. Lenin (1915, 1916), and Werner Sombart (1913), Veblen (1917), with post-world war two tendrils spreading in the United States for example to Paul Baran and Paul Sweezy (1966), Seymour Melman (1985), and many others, a current that eventually flowed into what later will be referred to as military economics. Offshoots of this merged, in turn, into development economics (e.g., Frank, 1966), some of which reappears in discussions today on the economics of civil war, peace, growth, and development.⁵

The nub of the arguments among mercantilists, protectionists, socialists, and free-traders was (1) whether free, uninhibited trade fosters peaceful relations among states as a consequence of contributing to generalized prosperity, or (2) whether such trade impoverishes people such that protection from trade ought to be sought (especially in primary industry), even if that meant to go to war, or (3) whether states that grow rich on the back of trade are impelled, on their own or at the behest of its leading tradesmen and financiers, to engage in imperialist adventures and colony-seeking. This was international trade, finance, and institutional economics under the guise of *war economics*. Perhaps the most famous tract of all was John Maynard Keynes' *The Economic Consequence of the Peace* (1920), an excoriating comment on how the planned economic dismemberment of a defeated Germany would but give rise to another war—as indeed it did.

As will be seen next, *defense economics*, even if it deals with war, is of a different character.

3. The 1960s: Defense (and War) Economics

Whereas the turmoil of world war one led to acrimonious debates on how best to put Humpty-Dumpty back together again, it was the post-world war two era, with its centrality, first, of reconversion and, second, the cold war's nuclear warfare threat, that led to the emergence of defense economics as probably the first distinct branch within economics

dealing with questions of war and preparation therefore.

In 1776, Adam Smith's primary concern was to lay down a general system of thought. Meanwhile, practical men—for men they invariably were—had to address practical questions such as *how* to finance war, *how* to raise troops, and *how* to equip them. After war, further practical questions of disarmament (and rearmament) arose and of how to stitch Smith's treasured but ruptured trade networks back together again. Because conversion and reconversion (i.e., mobilization and demobilization) are episodic they encouraged but bursts of work before and after major war. This could not result in sustained academic attention to the issue of how to smooth the adjustment paths of production, distribution, and consumption from peace to war and back again.⁶ But as Adam Smith foresaw, with the advent permanent war economies (Melman, 1985)—standing armies and states of permanent readiness—while modulating the amplitudes of ramp-up and ramp-down in the peace-war-peace phase switches, the crux of the matter increasingly lay in war planning.

Why call this defense economics, rather than war economics? An historical aside is useful here. Mendershausen (1940) defines his subject matter as “the economic aspects of war preparation, warfare, and war liquidation” (p. ix) and labels it *war economics*. At the time that was not without merit. Not only had world war two begun but the United States had had a Department of War since 1789 and a Department of the Navy since 1798 (when it was separated out from the Department of War). A major reorganization took place in 1947. In addition to keeping the Department of the Navy, a new Department of the Air Force was established by separating out the U.S. Army Air Force from the Department of War. What remained of the Department of War was renamed as the Department of the Army. But having three Departments (Army, Navy, Air Force) was cumbersome and, in 1949, a newly formed Department of Defense then consolidated (most) defense and war functions. The term “defense” rather than “war” was chosen, in part, to reflect the civilian leadership of the new department.⁷ By analogy, Mendershausen's *war economics* may then be re-labeled as *defense economics*, and it deals with the more practical aspects of preparing and managing a state's armed forces and of the overall defense function of any one state or the alliances it may form.

Today, the term defense economics is a wide use but given this history, a more descriptive term would be *defense and war economics*, more so since France, Russia, the United Kingdom, and the United States, especially, frequently engage in wars that would appear to have little to do with the defense of their respective realms. (The war economics of the prior section, as we saw, was about trade-related causes and consequences of war rather than about

the preparation for, execution of, and liquidation of war.)

Apart from scholarly works (e.g., Mendershausen, 1940; Hitch and McKean, 1960; Peck and Scherer, 1962; Scherer, 1964; Schelling, 1960, 1966; Olson and Zeckhauser, 1966), if defense economics has a *policy*-related date of birth, it might be 21 January 1961, the day Robert McNamara started work as U.S. Secretary of Defense. With undergraduate studies in economics, mathematics, and philosophy, as well as with an MBA degree and teaching experience at Harvard Business School in hand, he served during the latter half of world war two in the Office of Statistical Control within the U.S. Army Air Force. To this he brought a keen interest in systems planning and analysis. Following the war, he and a set of fellow officers joined Ford Motor Company *en bloc* where this troop of “whiz kids” (young analysts) applied the same techniques to the company. In time, McNamara rose to become its president. When appointed by John F. Kennedy to head up the Department of Defense, McNamara brought the “whiz kids” idea with him and, somewhat to the chagrin of the generals, his civilians instituted detailed planning, decision, and control mechanisms in defense and war planning. Frequently, these were based on explicitly economic and managerial concepts.

In time, defense economics became the common term used for the subject matter that deals with, for example, military manpower issues such as peak-load demand (during crises and war), incentive pay and bonus considerations, the shift from conscription to an All-Volunteer Force (AVF), the use of supplementary forces (reserves, private military contractors), military procurement and contracting (e.g., bi-lateral monopolies), defense equipment volume production to achieve average unit cost reductions (which usually implied arms export pushes and hence attendant arms import, export, and arms trade-related offset regulations). Additional themes include defense logistics, military technology and questions related to technology spin-offs and spin-ins to and from civilian industry, and defense budget analysis. These, and myriad related topics, are mainly *internal* to the defense function of states. Before long, analyses appeared regarding alliances of states (e.g., NATO) and defense burden-sharing and burden-shifting, i.e., the possibility of free- (or at least easy-) riding, and these also would become part of defense economics. A vast number of citations to persons and research institutes, e.g., the RAND Corporation, could be given. Hartley (2011), Hartley and Sandler (1995), Sandler and Hartley (1995, 2007), the Routledge Series in Defence and Peace Economics, as well as *Defence and Peace Economics*, a scholarly journal founded in 1990 and edited for many years by Hartley and Sandler, are starting points for readings.⁸ The recent founding in January 2013,

instigated by Martin Feldstein at Harvard University, of an Economics of National Security Association (ENSA) also belongs in the defense economics category.

If (*trade*) *war economics* was about actual or potential violent conflict between and among states over issues of cross-border trade, *defense (and war) economics* is addressed primarily to the defense establishment within states as well as between and among them, e.g., in alliance matters. *Conflict* economics and *military economics* are different yet again.

4. The 1960s (and especially since the 1990s): Conflict Economics

If *defense economics* arose in the early 1960s, so, too, did *conflict economics*. If defense economics was in the main inward-looking, internal to the carrying out of a state's defense function but with respect to an external threat, conflict economics took a view beyond the defense function itself. Having co-founded the *Journal of Conflict Resolution* (in 1956), perhaps the seminal work is Kenneth Boulding's *Conflict and Defense* (1962) in which he theorized conflict and the social systems within which it occurs broadly. Of similar importance, Jack Hirshleifer laid down "economic foundations of conflict theory," as the subtitle of a book containing a collection of his important papers has it (Hirshleifer, 2001). Boulding's work transitioned into—or perhaps never departed from—peace economics (e.g., Boulding, 1945, 1978) while Hirshleifer's work, especially his focus on appropriation and his invention of contest success functions, are among the core concepts used by conflict economists.

Charles Anderton writes: "Conflict can be defined as the use of resources for creating or defending against appropriation" (2003, p. 216; also in Anderton and Anderton, 1997, p. 55). Later, with John Carter, Anderton defines conflict economics as "(1) the study of violent or potentially violent conflict using the concepts, principles, and methods of economics and (2) the development of economic models of appropriation and its interaction with production and exchange activities" (Anderton and Carter, 2009, p. 2). As for Hirshleifer, the possibility of appropriation is central. In particular, Anderton shows in the 1997 chapter and in the 2003 article that the restriction of modern-day economics primarily to the study of mutually beneficial voluntary exchange, in which parties voluntarily part with something of value in exchange for something they expect to value even more, is an artefact of economists' love affair with a Walrasian/Marshallian take on the purview of economics. Both before and after Walras and Marshall, economists of equal professional stature argued that one party's taking of resources from

another, unwilling, party—appropriation—also constitutes economics because resources have to be allocated to make appropriation possible and resources have to be allocated to defend against appropriation. (To this involuntary one-sided economy of fear, Boulding, 1973, later added the voluntary one-sided economy of love, i.e., of gifts or of grants.)

Appropriation includes aspects of the economics of crime, i.e., interpersonal violence and organized crime just as much as it includes intra- and inter-state conflict. To this could be added Schelling's work on bargaining theory and, with it, the strategic aspects of conflict and hence a large literature on arms races, nuclear or otherwise. In this, conflict economics encompasses aspects of defense economics.

In 1776, Adam Smith showed some awareness of asymmetric warfare. (When standing armies become less than well-exercised, well-regulated, and well-disciplined, militias may well succeed against them.) Today, a large literature has sprung up examining civil war (which is often asymmetric), militias, rebel groups, and economic aspects of terror organizations and their acts (e.g., Enders and Sandler, 2011). Anderton and Anderton (1997) place Edgeworth (1881), Pareto (1906), and Haavelmo (1954) among the precursors of conflict economics but say that it was only during the 1960s and 1970s that “strands of conflict economics literature began to emerge,” and they refer to Boulding (1962), Schelling (1960, 1966), McGuire (1965), Olson and Zeckhauser (1966), Isard (1969), Intriligator (1975), and Tullock (1974), “all bringing the study of nation-state hostility within the domain of microeconomics” (p. 56). This, in turn, led to literature extensions on “international conflict, alliances, revolution, terrorism, and the predatory state” (p. 56) and to further extensions endogenizing the formation of law when production and appropriation are equally viable (Bush, 1972; Buchanan, 1975) as well as to Hirshleifer's production and conflict models (beginning in 1988).

The focus on *microeconomic* theory and techniques is somewhat misplaced. This characterization captures much of the literature of the 1960s and 1970s, true. But the upswing in the number of civil wars in Africa and elsewhere in the 1990s, following the end of the cold war era, lead to an explosion of work by economists and quantitative political scientists many of which indeed are microeconomic in nature but many of which are not (see, e.g., Collier and Hoeffler, 2001; Cramer, 2007; Blattman and Miguel, 2010). Moreover, vicious war in developing countries became in many instances the very antithesis of development. It became de-development, and *violence economics* would be a more apt term than the seemingly sanitized term *conflict economics*. Wars in developing

countries also gave rise to a small number of studies on the application of economic sanctions (Kaempfer and Lowenberg, 2007) and to understand mass atrocities more generally (Anderton and Brauer, 2016). Still, conflict economics has become a catch-all phrase, perhaps the default category when the more circumscribed category of defense economics does not seem to apply. But there are other distinct streams of literature: military, security, and peace economics.⁹

5. The 1970s and 1980s: Military Economics

If conflict economics applies economic tools of analysis to conflict and appropriation and does so, today, overwhelmingly in the context of war in developing countries, where does that leave well-industrialized, developed economies, most of which no longer appear to engage in outright war and where much violent conflict takes place in terms of interpersonal and organized crime?¹⁰

The answer lies in a spur that sprang out of defense economics. All along, economists have recognized the importance of tradeoffs in resource allocation—a dollar spent on “guns” cannot simultaneously be spent on “butter”.¹¹ Certainly beginning with the 1970s, economists began to examine the economy-wide ramifications of military expenditure. If tradeoffs exist, the effect should be visible in nonmilitary government spending, e.g., in reduced allocations to health and education budgets, or in the diversion of scientists and engineers to military-related R&D and an attendant decline in the productivity of the civilian economy. Such resource diversion should affect overall economic growth (for an early study, see Smith, 1977; for a recent, and perhaps definite, study see Dunne and Tian, 2016). Along with their students, J. Paul Dunne and Ron Smith have written what now must amount to hundreds of papers on the effect of military expenditure on investment and economic growth. In addition, Dunne and Smith also pushed the empirical frontier in regard to arms production and the global arms trade (for an example, see Dunne and Smith, 2016). In both efforts they were aided by data collections at the Stockholm International Peace Research Institute (SIPRI) in particular. Some argued that military investment in the technology required for arms production would, in time, spin off into the civilian economy; others argued that one might as well have invested in the civilian sector to begin with. Moreover, in today’s technological environment the arrow of movement might well point to the spin-in of technology and off-the-shelf purchases of commercial products to military use (Ruttan, 2006).

Similarly, the legacy cost of war, or preparation therefore, is not generally considered to be part of defense or of conflict economics. In the United States, those costs are budgeted for the Department of Veterans Affairs, not the

Department of Defense. The costs of building, maintaining, and decommissioning military-nuclear installations fall under the budget of the U.S. Department of Energy. Many such military-related costs are shifted to other departments or government corporations (e.g., the Export-Import Bank of the United States) or deferred to the future. For example, when countries borrow to finance war, the interest paid in future years is a legacy cost not accounted for in defense budgets, now or in future (Brauer, 2007). Along similar lines, Stiglitz and Bilmes (2008) point to the decades-long costs that will accrue to the United States to pay for the Afghan and Iraqi wars of the 2000s and 2010s. What all this suggests is that there are topics which, while related to the defense function of states, nonetheless transcend that function and affect other segments of society. Studies of the ramifications of defense, let alone war, thus often haven taken on a critical hue, and so the defense economics of the 1960s gradually broadened as from the 1970s into *military economics*. It did so, ironically (given Robert McNamara's interest in systems), by taking a system-analytic view of the society-wide effects of defense.

There is an additional aspect to military economics. The mid-career and younger generations of today's economists may not quite appreciate the extent to which the early development of modern econometrics is entwined with thinking about war and peace. The early great national, regional, and world-model building economists Jan Tinbergen (1903-1994), Trygve Haavelmo (1911-1999), Wassily Leontief (1906-1999), Walter Isard (1919-2010), and Lawrence Klein (1920-2013), for instance, *all* were formed by world war experiences and *all* thought deeply about war and peace from a system-wide, macro-modeling point of view, if for no other reason than that in modeling economy-wide systems they of necessity had to deal with the commotions of violence.

Thus, Haavelmo argues in his classic work, *A Study in the Theory of Economic Evolution* (1954), that states may compete violently over each others' natural resources, that—anticipating appropriation—there are “other means of acquiring goods and services than by production and peaceful trade,” and that “as a result of migrations, it is, e.g., quite possible that both emigrants' regions and immigrants' regions may have more goods and services per capita than before, while the natives of the immigrants' regions have less” (pp. 84-85). He constructs a model of “peaceful” interregional contact, a model which can produce both, growing divergence and convergence between regions (p. 91). In the section following that, Haavelmo then introduces the notion of productive and unproductive effort, the latter “to express the fact that ‘unproductive’ activities may be directed towards actually hampering the productive efforts of other groups” (p. 91). The overall capacity of a region may be directed toward one of two ends,

“one leading to a larger global output of goods and services, another towards securing a larger share in the total” (p. 92), a distinction Haavelmo traces back to Vilfredo Pareto (1906) and one that has been employed by Lloyd Dumas (1986) and William Baumol (1990).

Haavelmo writes that “unproductive activities by one region must be assumed to meet with counter-measures from other regions. The net gain, for a particular region, from this kind of activity is then the result of the efforts that the region can muster over and beyond what is required to defend itself against the unproductive activities of other regions” (p. 93). Consequently, the “essential observation to be made ... is that the existence of opportunities [for unproductive activity] must be expected *generally to lead to a reduction in global output ...*” (p. 93; Haavelmo’s emphasis), an observation that appears to have escaped Adam Smith! This may read like defense or conflict economics, but Haavelmo talks about more than the actual and potential violent conflict between states that can trade or else attempt to appropriate. He talks about the decision calculus involved, he highlights the incentives, opportunities, and constraints players in the system face, and he points to a Red Queen effect (“it takes all the running you can do, to keep in the same place”)¹² in that states may engage in unproductive effort so that “a considerable amount of effort may be wasted in keeping such a status quo” (p. 94). He thereupon introduces game-theoretic thinking into his analysis and sees conflict settlement regions wherein states agree to limit unproductive activity so that their net gain need no longer sum to zero (p. 96). He also sees that uncertainty over each others’ responses (problems of credible commitment) may lead states to settle on suboptimal global production outcomes (p. 98).

Haavelmo thus started a line of model-based inquiry, taken up for instance by Wassily Leontief and Faye Duchin (1983), Walter Isard (1988, 1992), Jan Tinbergen and Dietrich Fischer (1987), Tinbergen (1990), and Lawrence Klein (1995). Increasingly, they all turned on the unproductive nature of Adam Smith’s “expence of defence” and on the second-round consequences of such expense for income and wealth maldistribution and inequality. Even in the absence of war, just the threat of it, and the preparation therefore, can cause serious adverse national economy-wide and world-wide consequences.

The issue of the cost and inherent danger of arms races, already well-known in practice, and hinted at by Adam Smith in theory, found mathematical expression in the posthumously published work of Lewis Fry Richardson (1960a, 1960b) in which he postulated differential equations that contained reaction, grievance, and fatigue

parameters to characterize arms races that could spiral out of control. Once rediscovered, economists began a cottage industry of arms race modeling (see, e.g., the slew of Intriligator/Brito models, starting in the late 1960s) that, as from the 1980s onward began to be complemented with empirical work on arms race dyads such as India-Pakistan and Greece-Turkey.

As indicated, much of military economics comes down to a critical examination of economists' fundamental opportunity cost argument: A dollar spent on arms is a dollar *not* spent on feeding, clothing, housing, or educating the multitudes. Defense may be necessary—economists acknowledge that—but surely there are limits to the necessity beyond which a dollar spent is a dollar wasted.¹³

As an aside, it may surprise that economic aspects of peacekeeping often should be placed in the rubrics of defense economics (e.g., peacekeeping budgetary issues) or of conflict economics (e.g., third party intervention, an allocation of resources to intervention), or even in the military economics rubric (e.g., critical views of peacekeeping) but as yet rarely in the rubric of peace economics.¹⁴

6. The 2000s: Security Economics

The economic analysis of terrorism, that is, of terror organizations and the causes, consequences, and policy responses of and to their acts, can be dated back to the 1960s and 1970s when a number of European countries, for example, France (Action Directe), Germany (Baader-Meinhof Group), and Italy (Red Brigade), experienced series of attacks by domestic terror groups. In the past, this analysis has often been lumped into defense economics or conflict economics but I argue that it does not fit well within either category. An act of terror perpetrated by a domestic rather than transnational terror organization would ordinarily be dealt with by internal security forces rather than by the country's armed forces, i.e., an externally-oriented military force. Thus, defense economics may capture some but not all aspects of the economic analysis of terrorism. Similarly, if "[t]errorism is the premeditated use, or threat of use, of extra-normal violence or brutality *to gain a political objective* through intimidation or fear" (Sandler and Hartley, 1995, p. 308; my emphasis) then terror is not primarily about appropriation, as it would have to be if it were to fall into the conflict economics category. In the post-world war two era of the 1950s to 1970s in Europe and in the Middle East, acts of terror were used to compel public attention and a seat at a bargaining table. In addition to France, Germany, and Italy, other big European countries such as Spain and the United Kingdom saw upsurges in terror-related violence, and the Palestine Liberation Organization (PLO) commanded worldwide attention with

daring acts such as taking athletes hostage during the 1972 Munich Olympic Games. The purpose was not appropriation of political power or crass economic gain. The purpose, as Sandler and Hartley rightly write, was “to gain a political objective,” namely recognition and, with it, bargaining power. Similarly, during the apartheid years in South Africa, the armed faction of the African National Congress (ANC) used acts of economic sabotage not to appropriate the power to govern from the minority regime but to compel a hearing that, eventually, resulted in a fair political vote on the governance of the country. It seems, then, that the economic analysis of terrorism belongs into a different rubric.

Following the attack on the World Trade Center in New York City in September 2001 in particular, the literature on the economics of terrorism expanded rapidly. And so did related literature as—suddenly—everything seemed to be in need of becoming “securitized.” Subject matters such as industrial perimeter security, biometrics, and cybersecurity became hot topics of discussion. Clearly, the concern broadened beyond terror. Tilman Brück (2005, p. 376) defines what he calls the security economy “as those activities affected by, preventing, dealing with and mitigating insecurity in the economy.” In considering the “direct, first-, and second-order effects of insecurity on economic activity”, private and public sector policy responses to the security economy must balance various trade-offs (e.g., security and efficiency; security and freedom; security and equity) as “akin to such effects in insurance economics” (Brück, 2005, p. 375). This is much more than defense economics inasmuch as the coverage of security economics extends to span topics from (organized) crime to homeland security to advancing the protection of critical assets of national public or private infrastructure (e.g., electric utilities). This is also more than conflict economics in that the purview of security economics appears to encompass more than (the threat of) appropriation and defense therefrom. The way Brück envisions it, “in addition to its striking direct effects, insecurity can have important indirect effects via agents’ behavioural and governments’ policy responses. Policy insecurity, the burden and incidence of security regulation, and unintended responses to policies may raise aggregate insecurity further. The emergence of new risks induces structural changes in the economy, both across sectors and across countries. Markets may be inhibited due to insecurity but they can also help to pool risks and to alleviate the costs of remaining risks. Regulation can also help support the emergence of markets otherwise threatened by insecurity. Non-markets instruments may be useful for enabling access to the security economy and for coordinating technical standards. There is hence a potential for the emergence of ‘secure growth’, akin to the emergence of ‘green growth’” (2005, p.

388). *Secure growth* is not normally the purview of conflict economics.

All that said, security is not peace. Security is of a short-term nature, a condition in need of constant renewal that constantly draws resources away from other applications. The greater the (perceived) threat, the greater the need for security, and the greater the resources applied to fend off insecurity. And so the question arises: What is peace economics?

7. Peace Economics

Peace economics goes back to Kenneth Boulding (1910–1993) and Walter Isard (1919–2010) in particular. A number of Boulding’s writing already have been mentioned (1945, 1962, 1973, 1978). As mentioned, Boulding also co-founded the *Journal of Conflict Resolution* (1956). Isard was the driving force behind the founding of the Peace Research Society (in 1963), later renamed the Peace Science Society (1973). He helped to set up paper series and journals, including the on-going journals *Conflict Management and Peace Science* (1973) and *Peace Economics, Peace Science, and Public Policy* (1993).¹⁵ More recently, Brauer and Dunne founded *The Economics of Peace and Security Journal* (Brauer and Dunne, 2006).

Anderton (2003, p. 209, note 1) writes: “Peace economics focuses upon the causes of conflict and ways that it can be managed, reduced, or eliminated. Defense economics embraces the topics and concerns of peace economics, but it also encompasses analytical methods for achieving optimal weapons production and optimal allocations of resources for prosecuting war.” This subsumes peace economics under the larger rubric of defense economics. And it leaves unclear how conflict economics (concerned with “the use of resources for creating or defending against appropriation,” p. 216) would be distinctly different, for surely the causes of conflict (in peace economics) include the desire for appropriation and the optimal allocation of resources for prosecuting war (in defense economics) are related to appropriation.

The inverse of defense (or of war) economics is not peace economics. Analogous to Johan Galtung’s famous differentiation of “negative” peace from “positive” peace, the inverse of defense, conflict, or even security economics would be “negative” peace economics. But since less defense, less conflict, and more security can be achieved through more effective repression, peace must be something else. Thus, “positive” peace economics is of a different character altogether. In 2013, Raul Caruso and I defined peace economics as follows: “Peace economics concerns the economic study and design of political, economic, and cultural institutions, their interrelations, and

their policies to prevent, mitigate, or resolve any type of latent or actual violence or other destructive conflict within and between societies” (Brauer and Caruso, 2013, pp. 151–152). Without neglecting causes and consequences of violent or nonviolent conflict, peace economics directs attention to how to design irreversible, stable peace and harvest the benefits of peace just as other economists focus for instance on the design of and benefit from trade. If defense economics is about deterrence and avoidance of war (or preparation therefore), if military economics is about taking critical perspectives on defense (and war), if conflict economics is about appropriation and, in recent years, about civil war-related apocalypse, and if security economics is about assessing, insulating oneself from, or managing risk, then peace economics is about something more hopeful than all that. It is—idealistically—about institution- and norm-building that would make the other fields irrelevant. (Societal) peace is possessed of a long-term, inherently social contract-type of quality and requires the construction of norms of behavior and incentive compatible mechanism and institutions such that security-related outlays can be minimized and conflict can be resolved nonviolently and constructively. The already established field of mechanism design (reverse game theory) well captures the intent of peace economics.¹⁶

Peace economics in this sense is about a phase switch to irreversible peace. Like game theorists, we would want to study the existence, uniqueness, and stability of the social system. We would want to mend vulnerabilities in the system. We would want to make societies resilient to failures of peace, just like engineers want to design bridges that do not fail. Ideally, we would want invulnerability, irreversibility, and unconditional viability of peaceful societies. We would want to study not the suppression of that which is destructive but the presence and upliftment of that which is constructive (Brauer and Caruso, 2013). One example is given by Jha (2007) who studies Hindu-Muslim cooperation over a one thousand years long history in India. He identifies three important conditions that made their cooperation mutually beneficial and stable. First was the creation of inter-group complementarities that gave rise to benefits from inter-group trade. Second, however, the sources of complementarity were fairly invulnerable to copying or expropriation. And third, the gains from trade were distributed in a manner regarded as “fair,” or else incentives to resort to violence would have arisen (as they later did).

Quite apart from the theoretical and practical difficulties of designing peaceful societies, challenges in peace economics include the difficulty of measuring the relevant outcome variable(s)—what exactly is positive peace?, what exactly are stable societies?—and that peace and prosperity are entangled (drives toward prosperity can

undermine peace, for instance when prosperity leads to excessively unequal income and wealth distributions).

8. Conclusion

The following lines provide summative “snapshot” views of war, defense, conflict, military, security, and peace economics.

(Trade) war economics (up to 1945): Treats of the economic causes and consequences of states at war; in historical analysis, this dealt specifically with the actual or potential violent contest among states over issues related to international trade and finance. Should not be called war economics *per se* but be considered part of the historical debates on the relative merits or demerits of the economics of international trade and finance.

Defense (and war) economics (as from the 1960s): Deals with the more practical economic aspects—in war or in peace—of preparing and managing a state’s armed forces and of the overall defense function, including war, of any one state and/or of the alliances it may form; addressed primarily to the defense establishment within states and between and among them. At one time called war economics (e.g., Mendershausen, 1940), the terminology switched just as Ministries or Departments of War become Ministries or Departments of Defense to indicate their civilian rather than military leadership.

Conflict economics (as from the 1960s, more prominently as from the 1990s): Studies possibilities of appropriation at the intra- and international levels and, today, overwhelmingly within the context of developing countries. Studies often, but not exclusively, grounded on neoclassical microeconomic precepts and covering diverse topics such as civil war, rebellions, terrorism, and mass atrocities. Often only implicitly concerned with peace.

Military economics (as from the 1970s, more prominently as from the 1980s): Treats topics which, while related to the defense function of states, nonetheless transcend that function and affect other segments of society. Studies the ramifications of defense, and war, often with a critical hue; frequently taking a system-analytic, macro-modeling view of the society-wide effects of defense and war.

Security economics (as from the 2000s): The security economy, and hence security economics, comprises economic activities affected by, preventing, dealing with, and mitigating insecurity. The purview is very broad, including (organized) crime and terrorism, and it carries strong resemblance to the economics of risk management and insurance.

Peace economics (already in the 1960s but more prominently as from the 2000s and 2010s): Peace economics

concerns the economic study and design of political, economic, and cultural institutions, their interrelations, and their policies to prevent, mitigate, or resolve any type of latent or actual violence or other destructive conflict within and between societies. Normative and forward-looking, it focuses on discovering and fostering conditions that make for stable, irreversible peace; might be deemed a branch of mechanism design.

Notes

1. Coulomb (2004) is a far more voluminous guide, albeit one that focuses mainly on pre-20th century literature and, thereafter, on heterodox literature. Also see Coulomb (1998), Anderton (2003), and Coulomb and Fontanel (2003).
2. On literature indexing and the bibliographic cataloguing of textbooks, see the Appendix.
3. All Smith quotes are from Edwin Cannan's edited 5th edition, available at <http://www.econlib.org/library/Smith/smWN.html> [accessed 21 January 2017]. The online edition does not contain specific page references to the printed edition.
4. As an aside, readers may recall that the Second Amendment to the U.S. Constitution reads: "A well regulated militia being necessary to the security of a free state, the right of the people to keep and bear arms shall not be infringed" (adopted in 1791). Today, the untutored may find the phrase "well regulated militia" difficult to comprehend but at Smith's time, it reflected well-known terms.
5. Meanwhile, the academic debate on trade, prosperity, war, and peace has continued into our day for example with Mansfield (1994), Barbieri (2002), Polachek (2007), and Findlay and O'Rourke (2007), the contested idea being that it is cross-border trade rather than a particular political system that can help assure peace and prosperity (see, e.g., Chan, 2009, on the "democratic peace proposition"). Popular discontent and political elections still often revolve around the disputed benefits of trade.
6. For examples, see Samuelson and Hagen (1943), and Brauer and Tepper Marlin (1992).
7. To this day, the U.S. has a National *Defense* University along with a National *War* College, reflecting continued ambiguity over whether to employ the term "war" or "defense."
8. The journal was founded as *Defence Economics* in 1990; the "*and Peace*" portion was added a few years later.
9. In addition to the aforementioned journals, work on conflict economics (especially in regard to developing countries) has been published in the *Journal of Peace Research*, founded in 1964 by the Norwegian peace scholar Johan Galtung. As will be seen momentarily, it does not always publish work related to peace.
10. Reading the literature, one can get the impression that conflict economics "equals" developing economies defense economics "equals" developed economies. Contributors may wish to be careful and clearly stick to conflict economics as referring to an economic approach to the study of conflict and to defense economics as, more narrowly, focusing on practical matters internal to the defense establishment itself, irrespective of the country or nation the analysis may be applied to.
11. Before Paul Samuelson popularized the "guns-versus-butter" phrase, in this *Foundations of Economic Analysis* (1947), it was used, e.g., by Wernette in a piece entitled "Guns and Butter" (reprinted from *Harvard Business Review*, and cited in Mendershausen, 1940 [1943], p. 20, note 16).
12. Lewis Carroll, *Through the Looking-Glass*.

13. Ron Smith writes about his use of the term military economics: “Since defence economics is often about attack and peace economics is often about war, I have used the title military economics: the economics of the use of organised force” (2009, p. 1). A reading of his work over the past 40 years suggests, however, that military economics is *anti*-military economics, the misuse of force and of the economic resources required to put forces in play.

14. For examples of work on peacekeeping, see, e.g., Anderton and Carter (2007), Klein (2006), Sheehan (2011), Khanna, Sandler, and Shimizu (1999), Bove and Smith (2011), Berkok and Solomon (2011), and Raul Caruso, *et al.* (2017).

15. A retrospective on Isard is available in *Peace Economics, Peace Science, and Public Policy*, vol. 16, iss. 2 (2010), along with a set of papers on the definition and domain of peace economics. See <https://www.degruyter.com/view/j/peps.2011.16.issue-2/issue-files/peps.2011.16.issue-2.xml> [accessed 13 March 2017].

16. The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2007 was awarded in equal shares to pioneers in mechanism design research, Leonid Hurwicz, Eric S. Maskin, and Roger B. Myerson. Their Nobel Prize award ceremony lectures may be viewed at http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2007/ [accessed 11 March 2017].

References

Anderson, William L., Scott A. Kjar, and James D. Yohe. 2012. “War and the Austrian School: Modern Austrian Economists Take on Aggressive Wars.” *The Economics of Peace and Security Journal*. Vol. 7, No. 1, pp.

30–37. <http://dx.doi.org/10.15355/epsj.7.1.30>

Anderton, Charles H. 2003. “Economic Theorizing of Conflict: Historical Contributions, Future Possibilities.” *Defence and Peace Economics*. Vol. 14, No. 3, pp. 209–222.

Anderton, Charles H. and Anderton, Roxane A. 1997. “The Economics of Conflict, Production, and Exchange,” pp. 54–82 in Jurgen Brauer and William G. Gissy, eds., *The Economics of Conflict and Peace*. Aldershot, UK: Avebury Press.

Anderton, Charles H. and Jurgen Brauer, eds. 2016. *Economic Aspects of Genocides, Other Mass Atrocities, and Their Prevention*. New York: Oxford University Press.

Anderton, Charles H. and John R. Carter. 2007. “A Survey of Peace Economics,” pp. 1211–1258 in T. Sandler and K. Hartley, eds. *Handbook of Defense Economics*. Vol. 2. Amsterdam: Elsevier.

Anderton, Charles H. and John R. Carter. 2009. *Principles of Conflict Economics*. New York: Cambridge University Press.

Angell, Norman. 1909. *Europe’s Optical Illusion*. London: Simpkin, Marshall, Hamilton, Kent & Co. [Later republished (1910; 1933; 1939) under the more well-known title *The Great Illusion*.]

- Baran, Paul A. and Paul M. Sweezy. 1966. *Monopoly Capital*. New York: Monthly Review Press.
- Barbieri, Katherine. 2002. *The Liberal Illusion: Does Trade Promote Peace?* Ann Arbor, MI: University of Michigan Press.
- Baumol, William J. 1990. "Entrepreneurship: Productive, Unproductive, and Destructive." *Journal of Political Economy*. Vol. 98, No. 5, Part 1, pp. 893–921.
- Berkok, Ugurhan G. and Binyam Solomon. 2011. "Peacekeeping, Private Benefits and Common Agency," pp. 265–292 in Derek L. Braddon and Keith Hartley, eds. *Handbook on the Economics of Conflict*. Cheltenham, UK: Elgar.
- Blattman, Christopher and Edward Miguel. 2010. "Civil War." *Journal of Economic Literature*. Vol. 48, No. 1, pp. 3–57.
- Boulding, Kenneth E. 1945. *The Economics of Peace*. New York, Prentice-Hall.
- Boulding, Kenneth E. 1962. *Conflict and Defense: A General Theory*. New York: Harper.
- Boulding, Kenneth E. 1973. *The Economy of Love and Fear: A Preface to Grants Economics*. Belmont, CA: Wadsworth.
- Boulding, Kenneth E. 1978. *Stable Peace*. Austin, TX: University of Texas Press.
- Bove, Vincenzo and Ron Smith. 2011. "The Economics of Peacekeeping," pp. 237–264 in Derek L. Braddon and Keith Hartley, eds. *Handbook on the Economics of Conflict*. Cheltenham, UK: Elgar.
- Brauer, Jurgen. 2007. "Data, Models, Coefficients: United States Military Expenditure." *Conflict Management and Peace Science*. Vol. 24, No. 1, pp. 55–64.
- Brauer, Jurgen and Raul Caruso. 2013. "Economists and Peacebuilding," pp. 147–158 in Roger Mac Ginty, ed. *Routledge Handbook of Peacebuilding*. London: Routledge.
- Brauer, Jurgen and J. Paul Dunne. 2006. "Introduction: A New Journal." *The Economics of Peace and Security Journal*. Vol. 1, No. 1, pp. 4–5. <http://dx.doi.org/10.15355/epsj.1.1.4>
- Brauer, Jurgen and J. Paul Dunne. 2012. *Peace Economics*. Washington, D.C.: U.S. Institute of Peace Press.
- Brauer, Jurgen and John Tepper Marlin. 1992. "Converting Resources from Military to Non-Military Uses." *Journal of Economic Perspectives*. Vol. 6, No. 4, pp. 145–164. <http://dx.doi.org/10.1257/jep.6.4.145>
- Brück, Tilman. 2005. "An Economic Analysis of Security Policies." *Defence and Peace Economics*. Vol. 16, No. 5,

pp. 375–389.

Bush, C.W. 1972. “Individual Welfare in Anarchy,” pp. 5–18 in Gordon Tullock, ed. *Explorations in the Theory of Anarchy*. Center for the Study of Public Choice. Blacksburg, VA.

Buchanan, James M. 1975. *The Limits of Liberty: Between Anarchy and Leviathan*. Chicago, IL: The University of Chicago Press.

Caruso, Raul, Prabin Khadka, Ilaria Petrarca, and Roberto Ricciuti. 2017. “The Economic Impact of Peacekeeping: Evidence from South Sudan.” *Defence and Peace Economics*. Vol. 28, No. 2, pp. 250–270.

Chan, Steve. 2009. “The Democratic Peace Proposition: An Agenda for Critical Analysis.” *The Economics of Peace and Security Journal*. Vol. 4, No. 1, pp. 70–77. <http://dx.doi.org/10.15355/epsj.4.1.70>

Collier, Paul and Anke Hoeffler. 2001. “Greed and Grievance in Civil War.” World Bank Paper 28126. Washington, D.C.: The World Bank.

Coulomb, Fanny. 1998. “Adam Smith: A Defence Economist.” *Defence and Peace Economics*. Vol. 9, No. 3, pp. 299–316. <http://dx.doi.org/10.1080/10430719808404905>

Coulomb, Fanny and Jacques Fontanel. 2003. “Disarmament: A Century of Economic Thought.” *Defence and Peace Economics*. Vol. 14, No. 3, pp. 193–208.

Coulomb, Fanny. 2004. *Economic Theories of Peace and War*. London: Routledge.

Cramer, Christopher. 2007. *Civil War Is Not a Stupid Thing: Accounting for Violence in Developing Countries*. London: Hurst.

Dunne, J. Paul and Nan Tian. 2016. “Military Expenditure and Economic Growth, 1960-2014.” *The Economics of Peace and Security Journal*. Vol. 11, No. 2, pp. 50–56. <http://dx.doi.org/10.15355/epsj.11.2.50>

Dunne, J. Paul and Ron P. Smith. 2016. “The Evolution of Concentration in the Arms Market.” *The Economics of Peace and Security Journal*. Vol. 11, No. 1, pp. 12–17. <http://dx.doi.org/10.15355/epsj.11.1.12>

Dumas, Lloyd J. 1986. *The Overburdened Economy: Uncovering the Causes of Chronic Unemployment, Inflation, and National Decline*. Berkeley, CA: The University of California Press.

Edgeworth, Francis Ysidro. 1881. *Mathematical Psychics*. London: C. Kegan Paul & Co.

Edgeworth, Francis Ysidro. 1915a. *On the Relations of Political Economy to War*. London: Oxford University Press.

Edgeworth, Francis Ysidro. 1915b. *The Cost of War and Ways of Reducing It Suggested by Economic Theory*.

- London: Oxford University Press.
- Edgeworth, Francis Ysidro. 1918. *Currency and Finance in Time of War*. Oxford, UK: Clarendon Press.
- Edgeworth, Francis Ysidro. 1919. *A Levy on Capital for the Discharge of the Debt*. Oxford, UK: Clarendon Press.
- Enders, Walter and Todd Sandler. 2011. *The Political Economy of Terrorism*. 2nd ed. New York: Cambridge University Press.
- Findlay, Ronald and Kevin H. O'Rourke. 2007. *Power and Plenty: Trade, War and the World Economy in the Second Millennium*. Princeton, NJ: Princeton University Press.
- Frank, Andre Gunder. 1966. *The Development of Underdevelopment*. Boston: New England Press.
- Haavelmo, Trygve. 1954. *A Study in the Theory of Economic Evolution*. Amsterdam: North-Holland.
- Hartley, Keith. 2011. *The Economics of Defence Policy*. London: Routledge.
- Hartley, Keith and Todd Sandler, eds. 1995. *Handbook of Defense Economics*. Vol. 1. Amsterdam: Elsevier.
- Hirshleifer, Jack. 2001. *The Dark Side of the Force: Economic Foundations of Conflict Theory*. Cambridge, UK: Cambridge University Press.
- Hirst, Francis Wrigley. 1915. *The Political Economy of War*. London: J.M. Dent & Sons.
- Hitch, Charles J. and Roland N. McKean. 1960. *The Economics of Defense in the Nuclear Age*. Cambridge, MA: Harvard University Press.
- Intriligator, Michael D. 1975. "Strategic Considerations in the Richardson Model of Arms Races." *Journal of Political Economy*. Vol. 83, No. 2, pp. 339–353.
- Isard, Walter. 1969. *General Theory: Social, Political, Economic, and Regional with Particular Reference to Decision-Making Analysis*. Cambridge, MA: MIT Press.
- Isard, Walter. 1988. *Arms Races, Arms Control, and Conflict Analysis*. New York: Cambridge University Press.
- Isard, Walter. 1992. *Understanding Conflict and the Science of Peace*. Cambridge, MA: Blackwell.
- Jha, Saumitra. 2007. "Maintaining Peace Across Ethnic Lines: New Lessons from the Past." *The Economics of Peace and Security Journal*. Vol. 2, No. 2, pp. 89–93. <http://dx.doi.org/10.15355/epsj.2.2.89>
- Kaempfer, William H. and Anton D. Lowenberg. 2007. "The Political Economy of Economic Sanctions," pp. 867–911 in Todd Sandler and Keith Hartley, eds. *Handbook of Defense Economics*. Vol. 2. Amsterdam: Elsevier.

- Keynes, John Maynard. 1920. *The Economic Consequences of the Peace*. London: Macmillan.
- Keynes, John Maynard. 1922. *A Revision of the Treaty. Being a Sequel to The Economic Consequences of the Peace*. London: Macmillan.
- Khanna, Jyoti, Todd Sandler, and Hirofumi Shimizu. 1999. "The Demand for UN Peacekeeping, 1975–1996." *Kyklos*. Vol. 52, No. 3, pp. 345–368.
- Kjar, Scott A. and William L. Anderson. 2010. "War and the Austrian School: Applying the Economics of the Founders." *The Economics of Peace and Security Journal*. Vol. 5, No. 1, pp. 6–11.
<http://dx.doi.org/10.15355/epsj.5.1.6>
- Klein, Lawrence R. 2006. "Peacekeeping Operations: From the Birth of the United Nations Onward." *The Economics of Peace and Security Journal*. Vol. 1, No. 2, pp. 4–6.
- Klein, Lawrence R., Fu-chen Lo, and Warwick J McKibbin. 1995. *Arms Reduction: Economic Implications in the Post-Cold War Era*. Tokyo: United Nations University Press.
- Lenin, Vladimir I. 1963 [1916]. *Imperialism: The Highest State of Capitalism*. Lenin's Selected Works, Vol. 1, pp. 667–766. Moscow: Progress Publishers. Available at
<https://www.marxists.org/archive/lenin/works/1916/imp-hsc/index.htm>
- Lenin, Vladimir I. 1970 [1915]. *Socialism and War*. Lenin Collected Works. Vol. 21, pp. 295–338. Peking: Foreign Languages Press. Available at <https://www.marxists.org/archive/lenin/works/1915/s+w/>
- Leontief, Wassily and Faye Duchin. 1983. *Military Spending: Facts and Figures, Worldwide Implications, and Future Outlook*. New York: Oxford University Press.
- List, Friedrich. 1856 [1841]. *National System of Political Economy*. Philadelphia, PA: Lippincott.
- Mansfield, Edward D. 1994. *Power, Trade, and War*. Princeton, NJ: Princeton University Press.
- Melman, Seymour. 1985. *The Permanent War Economy: American Capitalism in Decline*. New York: Simon & Schuster.
- Mendershausen, Horst. 1940. *The Economics of War*. New York: Prentice-Hall.
- McGuire, Martin C. 1965. *Secrecy and the Arms Race: A Theory of the Accumulation of Strategic Weapons and how Secrecy Affects It*. Cambridge, MA: Harvard University Press.
- Mill, James. 1808. *Commerce Defended*. London: Baldwin.

- Mill, John Stuart. 1848. *Principles of Political Economy*. London: J.W. Parker.
- Olson, Mancur and Richard Zeckhauser. 1966. "An Economic Theory of Alliances." *Review of Economics and Statistics*. Vol. 48, No. 3, pp. 25–48.
- Pareto, Vilfredo. [1971] 1906. *Manual of Political Economy*. Tr. by Ann S. Swhwier. New York: A.M. Kelley.
- Peck, Merton J. and Federic M. Scherer. 1962. *The Weapons Acquisition Process: An Economic Analysis*. Cambridge, MA: Harvard University Press.
- Pigou, Arthur C. 1916. *The Economy and Finance in War*. London: Dent & Sons.
- Pigou, Arthur C. 1921. *The Political Economy of War*. London: Macmillan.
- Polachek, Solomon W. 2007. "How Trade Affects International Interactions." *The Economics of Peace and Security Journal*. Vol. 2, No. 2, pp. 60–68. <http://dx.doi.org/10.15355/epsj.2.2.60>
- Ricardo, David. 1821 [1817]. *On the Principles of Political Economy and Taxation*. London: John Murray.
- Richardson, Lewis F. 1960a. *Arms and Insecurity: A Mathematical Study of the Causes and Origins of War*. Pacific Grove, CA: Boxwood Press.
- Richardson, Lewis F. 1960b. *Statistics of Deadly Quarrels*. Pacific Grove, CA: Boxwood Press.
- Robbins, Lionel. 1939. *The Economic Causes of War*. London: Jonathan Cape.
- Robbins, Lionel. 1947. *The Economic Problem in Peace and War*. London: Macmillan.
- Ruttan, Vernon. 2006. *Is War Necessary for Economic Growth? Military Procurement and Technology Development*. New York: Oxford University Press.
- Samuelson, Paul A. 1947. *Foundations of Economic Analysis*. Cambridge, MA: Harvard University Press.
- Samuelson, Paul A. and Everett E. Hagen. 1943. *After the War—1918–1920. Military and Economic Demobilization of the United States: Its Effect Upon Employment and Income*. National Resources Planning Board. Washington, D.C.: U.S. Government Printing Office.
- Sandler, Todd and Keith Hartley. 1995. *The Economics of Defense*. New York: Cambridge University Press.
- Sandler, Todd and Keith Hartley, eds. 2007. *Handbook of Defense Economics*. Vol. 2. Amsterdam: Elsevier.
- Say, Jean-Baptiste. 1841 [1803]. *Traité d'économie politique ou simple exposition de la manière dont se forment, se distribuent et se composent les richesses*. Paris: Guillaumin. (English: *A Treatise on Political Economy*. First American edition: 1821.)

- Schelling, Thomas C. 1960. *The Strategy of Conflict*. Cambridge, MA: Harvard University Press.
- Schelling, Thomas C. 1966. *Arms and Influence*. New Haven, CT: Yale University Press.
- Scherer, Federic M. 1964. *The Weapons Acquisition Process: Economic Incentives*. Cambridge, MA: Harvard University Press.
- Schmoller, Gustav. 1900 & 1904. *Grundriß der Allgemeinen Volkswirtschaftslehre*. Vols. 1 and 2. Leipzig: Dunker and Humblot.
- Sheehan, Nadège. 2011. *The Economics of UN Peacekeeping*. London: Routledge.
- Smith, Adam. 1759 [1790]. *The Theory of Moral Sentiments*. London: A. Millar. Retrieved from Library of Economics and Liberty. Available at <http://www.econlib.org/library/Smith/smWN.html> [accessed 13 March 2017].
- Smith, Adam. 1776 [1904]. *An Inquiry into the Nature and Causes of the Wealth of Nations*. London: Methuen & Co., Ltd. Edwin Cannan, ed. 5th edition. Retrieved from Library of Economics and Liberty. Available at <http://www.econlib.org/library/Smith/smWN.html> [accessed 21 January 2017].
- Smith, Ron P. 1977. "Military Expenditure and Capitalism." *Cambridge Journal of Economics*. Vol. 1, No. 1, pp. 61–76.
- Smith, Ron P. 2009. *Military Economics: The Interaction of Power and Money*. New York: Palgrave Macmillan.
- Sombart, Werner. 1913. *Studien zur Entwicklungsgeschichte des modernen Kapitalismus. Zweiter Band: Krieg und Kapitalismus*. München: Dunker & Humblot. [*Studies on the Development of Modern Capitalism. Vol. 2: War and Capitalism.*]
- Stiglitz, Joseph E. and Linda Bilmes. 2008. *The Three Trillion Dollar War: The True Cost of the Iraq Conflict*. New York: W.W. Norton.
- Tinbergen, Jan and Dietrich Fischer. 1987. *Warfare and Welfare: Integrating Security Policy into Socio-Economic Policy*. New York: St. Martin's Press.
- Tinbergen, Jan. 1990. *World Security and Equity*. Brookfield, VT: Gower.
- Tullock, Gordon. 1974. *The Social Dilemma: The Economics of War and Revolution*. Blacksburg, VA: University Publications.
- Veblen, Thorstein. 1917. *An Inquiry into the Nature of Peace and the Terms of Its Perpetuation*. New York:

MacMillan.

Westley, Christopher, William L. Anderson, and Scott A. Kjar. 2011. "War and the Austrian School: Ludwig von Mises and Friedrich von Hayek." *The Economics of Peace and Security Journal*. Vol. 6, No. 1, pp. 28–33.

<http://dx.doi.org/10.15355/epsj.6.1.28>

Wicksell, Knut. 1898. *Geldzins und Güterpreise*. Jena: G. Fischer. (First English translation: *Interest and Prices*, 1936. London: Macmillan).

Appendix

Within the economics profession, *Journal of Economic Literature* (JEL) subject matter codes that pertain directly to war, defense, conflict, military, security, or peace are as follows: D74 (Conflict, Conflict Resolution, Alliances, Revolutions); F51 (International Conflicts, Negotiations, Sanctions); F52 (National Security, Economic Nationalism); F54 (Colonialism, Imperialism, Postcolonialism); H56 (National Security and War); N40 (Government, War, Law, International Relations, and Regulation); and Q34 (Natural Resources and Domestic and International Conflicts). The words “defense,” “military,” and “peace” actually do not appear in the JEL codes. Neither do the words “violence” (or variations thereof) or “arms” (but “armaments” does). Of course, many other JEL codes cover studies related to violent and nonviolent conflict. Obvious examples include C70 (Game Theory and Bargaining Theory), D10 (Household Behavior), K14 (Criminal Law), K38 (Human Rights Law, Gender Law), K42 (Illegal Behavior and the Enforcement of Law), and L64 (Other Machinery; Business Equipment; Armaments).

Outside the economics profession, the U.S. Library of Congress (LC) classification and Dewey Decimal Classification (DDC) are important. Consider the four examples in Table A1, all of which are placed within the social sciences rubrics both, LC and DDC. In LC, the Sandler and Hartley volume is classified as “economic history and conditions”, Anderton and Carter are under “general sociology”, Smith is grouped with “industries, land use, and labor”, and Brauer and Dunne are in the “economic theory and demography” rubric. In DDC, Sandler and Hartley as well as Smith are classified under “production in secondary industries and services”. But the Anderton and Carter book is grouped under “social processes (conflict)”, and the Brauer and Dunne volume comes under the rubric of “macroeconomic policy”. In all, the cataloguers assign seven different classifications. Even as the economists frequently use the terms in a seemingly interchangeable way, clearly, the subject matter is not unitary. It is, as I have suggested, a marshland within which distinct currents flow.

The authors themselves also mingle the subject matters. In Sandler and Hartley (1995) we read that “defense economics is the study of both defense *and peace* issues, using the tools of modern economics. It covers a range of issues, including nuclear proliferation, resource disputes, environmental externalities, ethnic conflicts, and terrorism, all of which present grave threats to peace and security” (my emphasis). But a “threat to peace” can hardly be said to constitute the “study of peace.” Indeed, the introduction aside, the book’s table of contents includes chapters on the economic theory of alliances (ch. 2), the demand for military expenditures (ch. 3), arms races (ch. 4), procurement

(theories, evidence and policies) (ch. 5), military manpower (ch. 6), defense and the industrial base (ch. 7), economic growth, development and military expenditures (ch. 8), industrial and alliance policies (ch. 9), arms trade (ch. 10), arms control and disarmament (ch. 11), conversion (ch. 12), and nonconventional conflict: revolutions, guerrilla warfare and terrorism (ch. 13). Thus, the book's title *The Economics of Defense* is actually quite accurate.

Table A1: Subject classification for four text- or text-like books

	LC	DDC
Sandler and Hartley, <i>The Economics of Defense</i> (1995)	<u>HC110.D4</u> H Social sciences C Economic history and conditions 94-1085 By region or country	<u>338.4</u> 300 Social sciences -330 Economics --338 Production ---338.4 Secondary industries and services
Anderton and Carter, <i>Principles of Conflict Economics</i> (2009)	<u>HM1121</u> H Social sciences M Sociology (general) 1106-1171 Interpersonal relations. Social behavior	<u>303.6</u> -300 Social sciences --303 Social processes ---303.6 Conflict
Smith, <i>Military Economics</i> (2009)	<u>HD9743.A2</u> H Social sciences D Industries. Land use. Labor 9720-9975 Manufacturing industries	<u>338.4</u> 300 Social sciences -330 Economics --338 Production ---338.4 Secondary industries and services
Brauer and Dunne, <i>Peace Economics</i> (2012)	<u>HB3732</u> H Social sciences B Economic theory. Demography 3711-3840 Business cycles. Economic fluctuation	<u>339.5</u> -300 Social sciences --339 Macroeconomics and related topics ---339.5 Macroeconomic policy

Anderton and Carter (2009) define *conflict economics* as “(1) the study of violent or potentially violent conflict using the concepts, principles, and methods of economics and (2) the development of economic models of appropriation and its interaction with production and exchange activities” (p. 2). Apart from an introductory chapter, their book covers production possibilities and the guns versus butter tradeoff (ch. 2), rational choice and equilibrium (ch. 3), fundamentals of game theory (ch. 4), a bargaining model of conflict (ch. 5), conflict between states (ch. 6), civil war and genocide (ch. 7), terrorism (ch. 8), geography and technology of conflict (ch. 9), arms rivalry, proliferation, and arms control (ch. 10), military alliances (ch. 11), and conflict success functions and the theory of

appropriation possibilities (ch. 12).

Smith (2009) writes: “Since defense economics is often about attack and peace economics is often about war, I have used the title *military economics*: the economics of the use of organised force” (p. 1; my emphasis). If “defense” is attack and “peace” is war then military economics takes on a more critical perspective. Apart from the introduction, the book’s chapters are titled Power and Money (ch. 2; which deals with producing security, militarism, economic concepts, uncertainty, and economic-security interactions), Security: Are We Safe? (ch. 3; addressing individual, national, global security, war and oil, arms races and arms control), Military Spending: How Much is Enough? (ch. 4; treating of measures of military expenditure, motives for arming, economic functions of military spending, arms races, and military prices), Demand: The Biggest Bang for a Buck? (ch. 5; addressing labor, weapons procurement, and weapons technology), Supply: The Merchants of Death? (ch. 6; covering the arms industry, the evolution of the arms trade, and associated regulation), Military Capability: How to Win? (ch. 7; dealing with force employment, morale, logistics, and peacekeeping), and Economic Choices: Swords or Ploughshares? (ch. 8; covering budget constraints, the economic effects, technological spin-offs , and economic warfare.

Finally, Brauer and Dunne (2012) define *peace economics* as “the economic study and design of political, economic, and cultural institutions, their interrelations, and their policies to prevent, mitigate, or resolve any type of latent or actual violence or other destructive conflict within and between societies,” a definition taken from Brauer and Caruso (2013, pp. 151–152). Their book differs radically from the other three in part because unlike the others it focuses on macro- rather than microeconomic techniques and understanding and in part because they seek to identify moments of violence and potential possibilities for intervention or prevention within the macroeconomic context. Their chapters are Violence and Economic Development (ch. 1), Long-Term Economic Goals: Investment, Productivity, and Growth (ch. 2), Macroeconomic Stabilization and Dealing with Turbulence (ch. 3), The Global Economy: International Trade and Finance (ch. 4), and Designing and Promoting Peace (ch. 5).