World Economic Expansion and National Security in Pre–World War I Europe

David M. Rowe

Profound and rapid changes in the costs and risks of international trade are now widely acknowledged to be a potent source of domestic political conflict. By altering the relative prices of goods available from world markets, these changes alter the rewards that flow to different factors of production from different economic activities. These distributional consequences of changing levels of trade, in turn, alter the configuration of interests in the domestic political economy, strain existing political alignments, and enable the construction of new political coalitions. Thus, global changes in the economy, such as the transportation and telecommunications revolutions in the nineteenth and mid-twentieth centuries or the collapse of international trade and finance during the interwar years, will have global consequences as they reverberate within and through the domestic politics of all countries that trade on world markets.[1]

But surely such changes do more than influence countries' domestic politics. As scholars of international relations recognize, these changes occur within a system of sovereign states where concerns over national security are important determinants of state behavior. Consequently, should we not expect these changes to also systematically and predictably affect the economic constraints within which states must formulate and pursue their security interests? And, by affecting these constraints, to affect the broader stability of international relations?

I thank David Bearce, Pamela Camerra-Rowe, Thomas Christensen, Albert Fishlow, Timothy Frye, John Garofano, Peter Gourevitch, Peter Katzenstein, Jonathan Kirshner, Judy Kullberg, David Lake, Ned Lebow, Edward Mansfield, Patrick McDonald, Joseph McGarvey, Patrick Morgan, James Morrow, Wayne Sandholtz, Randall Schweller, David Skidmore, Andrew Sobel, Katherine Lawyer Sperling, Alec Stone Sweet, the participants in seminars at the Global Peace and Conflict Studies program of the University of California, Irvine, and the Peace Studies Program of Cornell University, and the anonymous reviewers for comments on previous drafts. I alone am responsible for any errors. I also thank Kenyon College for the gracious use of its library resources while I was an affiliated scholar at that institution. This research was supported by the National Science Foundation, grant no. SBR–9709556.

1. See Gourevitch 1978 and 1986; Rogowski 1987 and 1989; Frieden 1991; Keohane and Milner 1996; and Alt et al. 1996.

International Organization 53, 2, Spring 1999, pp. 195–231

I build on the fundamental insights of the Stolper-Samuelson theorem from international economics to argue that exogenous changes in the costs and risks of international economic exchange can powerfully affect the economic constraints that underlie the security behavior of states and that these effects will vary predictably across states with different factor endowments.[2] As preliminary evidence, I submit that the theory accords surprisingly well with the experiences of the European great powers in the rapidly expanding world economy prior to World War I and that many of the factors that contributed most to the breakdown of international relations in 1914 follow directly from the changing pattern of economic constraints that the theory predicts. By raising the economic returns that flowed to those resources most critical to military power in Europe prior to World War I, especially labor, the expansion of world trade progressively constrained the abilities of the European powers to mobilize these resources for security purposes. The growing difficulties of mobilizing resources raised international tensions and undermined stability by fueling anxieties in each state that it was declining relative to its rivals, which, in turn, generated powerful, systemwide incentives to go to war before one's own position became untenable. The rapid expansion of the world economy thus unleashed its own dilemma for pre–World War I Europe, for the more Europe prospered from the deepening integration of world markets, the more fragile became the security foundations on which that prosperity ultimately rested.

Clearly, the relationship between the international economy and the security politics of states has generated a substantial literature in international relations, from debates between liberals and realists over the consequences of economic interdependence to the economic dynamics underlying international hegemony and the rise and fall of great powers. I seek to contribute to this literature in at least four ways. First, by extending a widely accepted theory about the economic consequences of international trade—the Stolper-Samuelson theorem—to the realm of security, I seek to specify more precisely the causal mechanisms by which a changing world economy affects a state's security. Second, by focusing on the domestic distributional consequences of international economic exchange, I depart from the widespread belief that trade influences security primarily through its effects on aggregate national income (rising levels of trade increase a state's military potential by raising national income; falling levels of trade lower it). This departure enables me to make important and counterintuitive propositions. Contrary to conventional wisdom, I argue that the expansion of trade can *impair* the military power of some states even as it makes them more prosperous. Third, I offer a new interpretation of the origins of World War I that traces many of its causes to the expansion of the world economy. Finally, by showing how world economic expansion undermined European security, I directly challenge the conventional wisdom that the expansion of trade necessarily and unambiguously enhances the prospects for international peace.

I must also stress, however, that my argument is preliminary and that my empirical evidence only demonstrates its plausibility. Nor do I imply that changing economic

2. See Stolper and Samuelson 1941/42; and Rogowski 1987 and 1989.

constraints are the only, or even the most important, factor in determining the security politics of states or that I offer a general explanation of international security and conflict. Yet the ability of this theory to link important empirical and theoretical issues—ranging from the growing fragility of the European state system prior to World War I, to the impact of trade on international stability, to the dynamics of hegemonic theory—suggests that it taps a rich vein of inquiry of central relevance to scholars of international affairs.

The Economics of Security and Changing National Exposure to the International Economy

All states confront a significant economic problem. Security is costly. To build military establishments capable of defending vital national interests, states must draw resources out of the national economy and employ them in the security sector.[3] For example, industrial capital is necessary to build warships, tanks, and aircraft; human capital is necessary to develop new military technologies and the doctrines that govern the use of military force; labor is necessary for troops. This economic aspect of security implies that states may be vulnerable to externally induced changes in the costs and risks of international exchange. Because these changes alter the relative prices of domestic economic resources, they also alter the cost of using these resources for security purposes. In this way, a changing world economy may fundamentally shape the economic constraints on a state's security policies.

To explore this idea, I develop a simple framework that builds on the Stolper-Samuelson theorem from international trade theory.[4] This theorem holds that increasing exposure of the national economy to international trade benefits the owners and intensive users of those resources in which the economy is abundantly endowed relative to the rest of the world, while harming the owners and intensive users of those resources in which the economy is poorly endowed. For example, in an economy abundant in labor but scarce in capital, increasing exposure to international trade benefits labor and harms capital. Decreasing exposure to the international economy reverses these effects, so that owners and users of the economy's abundant resources suffer, while the owners and users of the economy's scarce resources gain.

I link these domestic consequences of a changing world economy to changes in the underlying economic constraints on a state's security behavior by making two assumptions. I assume, first, that the state's difficulty in mobilizing specific resources for security purposes will be directly related to the returns that those resources earn elsewhere in the national economy. The more that resources earn in nonsecurity sectors of the national economy, the more difficult it becomes for the state to use them for security. This assumption follows directly from the fact that scarcity is

3. Tilly 1990.

4. Although built on assumptions that almost never hold, the theorem's central insight appears robust. See Corden 1974, 93–104; Leamer 1984; Ethier 1984; and Rogowski 1989, 16–20.

ubiquitous in economic life, forcing the state to compete with other actors for the use of economic resources. Thus, as the number of potential claimants to a particular resource grows (that is, the higher the demand for that resource), the more difficult becomes the state's task of procuring it for security purposes.

How these difficulties become manifested in a state's security politics will be determined by the institutions and practices used to mobilize resources from the national economy. Where the state simply pays for the use of a resource, these difficulties will be reflected in the military budget. To prevent resources from being bid away to other users, the state must pay higher prices for resources in high demand (and thus enjoy fewer budgetary degrees of freedom) than for resources in low demand. Should its compensation fail to keep pace with the demand for resources elsewhere in the economy, the state will experience either shortages in the quantity or deficiencies in the quality of those resources it procures. Where the state compels the supply of resources (conscription, for example), the holders of those resources will invest greater efforts in evading state directives, the greater the potential returns from employing those resources in alternative uses.[5] In this instance, the state's difficulties will manifest themselves not as budgetary pressures, but more subtly, such as through resource holders evading or shirking military duties, raising demands for better compensation or, in the extreme, engaging in political resistance.[6]

Second, I assume that not all resources contribute equally to military power. Consequently, the state's ability to respond to changing relative prices by effortlessly substituting toward resources whose prices are falling will be limited by the extent to which these less costly resources are militarily useful. I make this assumption for three reasons. First, existing military technologies may not permit substituting cheaper resources for dearer ones. Prior to World War I, mechanized forms of transportation could not replace muscle power as the critical means of battlefield mobility. This reality both necessitated the use of large field armies to concentrate force against the enemy and limited the degree to which European militaries could make their armies more ''weapons (that is, capital) intensive.'' As William McNeil notes, ''an army that sought to achieve mobility in the field, as all European armies did before 1914, simply lacked the transport capacity to supply more than a token population of guns that spat forth bullets at the rate of 600 a minute.''[7] Second, the state's ability to substitute among various resources is often limited by exogenous strategic circumstances. Pre–World War I Britain, for example, required a (capital-intensive) navy to protect its empire and home islands. This strategic necessity prevented it from responding to a rise in the relative price of capital by using more intensively those resources

5. These effects will be mitigated where the state directly holds the particular resource. Even here it seems plausible that the state's use of the resource is more likely to be contested, either by factions within the state or by social elites who would capture the returns from alternative uses, the greater the potential returns of those uses.

6. The translation of shifting opportunity costs of compulsory military service into political activity is straightforward. The more the opportunity costs of military service rise, the more likely are resource holders to demand policies that offset them.

7. McNeil 1982, 273. See also Storz 1992, 295–97.

	National exposure to the international economy: Rising	National exposure to the international economy: Falling
State's difficulty mobilizing locally abundant resources	Increases	Decreases
State's difficulty mobilizing locally scarce resources	Decreases	Increases

FIGURE 1. *Predicted changes in the difficulty of mobilizing locally abundant and locally scarce resources*

(in this case, land) that were becoming less expensive under the impact of trade.[8] Third, slow turnover in the officer corps combined with the fact that militaries are only infrequently tested in war often impede change, allowing obsolete weapons and outmoded operational concepts to linger.[9]

These two assumptions, when combined with the Stolper-Samuelson theorem, yield two sets of propositions about the ways in which changing national exposure to the international economy affects the economic constraints on a state's security. First, increasing exposure to the international economy will increase the state's difficulty of mobilizing resources in which the economy is abundantly endowed while decreasing the difficulty of mobilizing resources in which it is scarce. Declining exposure reverses these effects (see Figure 1). Second, increasing exposure to the international economy will cause states in which militarily relevant resources are locally abundant to experience a general tightening of economic constraints on their security, states in which these resources are locally scarce to experience a general relaxing of economic constraints, and states in which some militarily relevant resources are locally abundant but others locally scarce to experience a mixed movement of constraints. For this last group, the overall consequences of growing exposure to the international economy will be determined by the extent to which they can substitute locally scarce resources for those that are locally abundant. Again, declining exposure reverses these effects (see Figure 2).

Preliminary Evidence: European Security Prior to World War I

To probe the plausibility of my theory, I explore how well it captures the experiences of the five European great powers—Austria-Hungary, Britain, France, Germany, and

8. This second point also suggests that trade can affect the security interests of *similarly* endowed economies differently, depending on exogenous strategic circumstances. I thank an anonymous reviewer for suggesting these points.

9. Rosen 1991.

	National exposure to the international economy: Falling	Rising
Militarily relevant resources are locally abundant	Tightening of economic constraints on the state's security	Relaxing of economic constraints on the state's security
Some militarily relevant resources are locally abundant, others are locally scarce	Mixed movement of constraints Overall movement of constraints determined by the extent to which state can substitute locally scarce for locally abundant resources	Mixed movement of constraints Overall movement of constraints determined by the extent to which state can substitute locally abundant for locally scarce resources
Militarily relevant resources are locally scarce	Relaxing of economic constraints on the state's security	Tightening of economic constraints on the state's security

FIGURE 2. *Predicted changes in economic constraints on the state's security*

Russia—in the decades prior to World War I. During this period, technological revolutions in communications and transportation, combined with international political stability, significantly lowered the costs and risks associated with international exchange and led to a dramatic and sustained expansion of the volume and range of goods, services, and capital being exchanged on world markets. Between 1870 and 1900, world trade almost doubled, and in the remaining years before World War I it

	Abundant in labor	
	Land poor	Land rich
Capital locally abundant	Britain, France, Germany	None
Capital locally scarce	Austria-Hungary	Russia

Source: Rogowski 1989.

FIGURE 3. *Economic endowments of the European great powers*

grew by nearly half again.[10] This expansion of trade led to the growing exposure of regional and national markets to the world economy—a development that profoundly affected almost every aspect of European economic, social, and political life.[11]

To generate specific predictions about this development for the security politics of the European great powers requires a model of the economy and knowledge about the importance and substitutability of various resources in European military competition. To address the first issue, I follow Ronald Rogowski's study on the effects of trade on domestic political alignments and classify each power according to its relative endowment in a three-factor model of land, labor, and capital, yielding a pattern in which the European powers occupied three niches in the world economy.[12] Britain, France, and Germany were abundant in labor and capital but scarce in land relative to the rest of the world; Russia was abundant in labor and land but scarce in capital; and Austria-Hungary was abundant in labor but scarce in land and capital (see Figure 3).[13]

Second, each of these economic factors differed in its importance to military competition in Europe. Land was the least valuable factor and, except for the peasantry (the intensive users of this resource) as a source of military labor, contributed little to the military strength of a great power.[14] More important were capital and labor, although the relative weight of each varied as to whether the issue was one of naval or land warfare. Key to naval competition was the state's ability to muster the economy's industrial capacity to build heavier, faster, and ever more technologically

10. Rogowski 1989, 21.
11. Gourevitch 1986, chap. 3.
12. Rogowski 1989. Modeling always involves a tradeoff between parsimony and accuracy. I believe the advantages provided by a three-factor model—parsimony, simplicity, and tractability—outweigh any potential loss in accuracy. Midford seeks to improve the accuracy of Rogowski's work by using a more disaggregated model. Midford 1993.
13. Rogowski 1989, 25–30.
14. Clearly, land and geography matter in military competition. States that possess vast swaths of land can use it as a defensive strategic asset. But given the perceived advantages of offensive warfare in the nineteenth century, land mattered less than either capital or labor, which were key to building and projecting mobile armies.

sophisticated warships.[15] On land, the individual soldier was the basic unit of a state's military strength. The standardization and mass production of weaponry meant that individual soldiers could now be outfitted much more cheaply, and increases in the accuracy, range, and firepower of their weapons made them much more lethal, and vulnerable, in combat, thus requiring the use of large forces to absorb combat casualties.[16] As a consequence, hardware comprised a relatively small component of a state's landward military power before 1914; more important was the sheer number of soldiers a state could field in battle.[17]

Finally, the substitutability between these factors was limited. Ships, not sailors, were the key ingredient of naval power. Adding extra personnel to a ship once it was fully staffed simply would not increase its war-fighting abilities. On shore, it was muscle, not machines, that mattered most. The ability to substitute capital for labor was sharply limited by the fact that Europe's armies had not yet solved the problem of battlefield mobility.

We can now predict that the expanding world economy will generate three patterns of shifting economic constraints on the European great powers (see Figure 4). First, Britain, France, and Germany will confront a general tightening of economic constraints on their security. Each will experience growing difficulties in mobilizing those resources most critical to military competition—capital and labor—into the military. They will also find the peasantry (the intensive users of land) to be a shrinking source of military labor as labor-intensive export sectors attract lower wage labor out of land-intensive agriculture. Second, Austria-Hungary will experience a mixed movement of constraints: increasing difficulties in mobilizing labor but a growing ease in mobilizing capital. It, too, will find the peasantry to be a fleeting source of military labor. Third, Russia will also experience a mixed movement of constraints: increasing difficulties in mobilizing both labor *and the peasantry* (the holders and intensive users of Russia's other abundant resource—land) into the military and an increasing ability to mobilize capital.[18] And, although both Austria-Hungary and Russia will experience a growing ease in mobilizing capital for security purposes, the continental geographic positions of these states, the critical importance of land-based armies to their security, and the limited ability to substitute capital for labor in land warfare imply that the net effect of an expanding world economy will be to tighten the economic constraints on the security of these capital-poor states as well.

Keeping in mind that these changing constraints will manifest themselves in different ways under different institutional settings, I submit that these hypotheses capture succinctly the changing political economy of security in pre–World War I Europe. I will consider, first, whether the predicted patterns of shifting constraints are evident in the security politics of the great powers and, second, whether and how these shifting constraints may have affected European security.

15. See McNeil 1982; Sumida 1989; and Stevenson 1996, 10, n.15.
16. Posen 1993, 83–84.
17. See Stevenson 1996, 62; and Herrmann 1996, 228.
18. By World War I, most of Russia's productive agricultural land was in the hands of the peasantry. Lieven 1983, 18.

	Abundant in labor: Land poor	Abundant in labor: Land rich
Capital abundant	**Britain, France, Germany** General tightening of constraints Increasing difficulty mobilizing labor Increasing difficulty mobilizing capital Reliable peasantry	**None**
Capital scarce	**Austria-Hungary** Mixed movement of constraints Increasing difficulty mobilizing labor Decreasing difficulty mobilizing capital Reliable peasantry	**Russia** Mixed movement of constraints Increasing difficulty mobilizing labor Decreasing difficulty mobilizing capital Unreliable peasantry

FIGURE 4. *Predicted changes in economic constraints on the European great powers prior to World War I*

Britain, France, Germany—Tightening Constraints

Ample evidence suggests that Britain, France, and Germany experienced increasing difficulty in mobilizing their locally abundant resources, labor and capital, prior to World War I. I turn first to labor. Unique among the European powers, Britain used voluntary enlistment to recruit military labor. Although Britain doubled the net pay of army recruits in the latter half of the nineteenth century, army wages lagged behind civilian wages, causing chronic shortages of recruits.[19] Between 1910 and 1913, Britain needed to recruit 34,000 new soldiers each year but managed to attract an

19. See Spiers 1980, 54–55; and Skelley 1977, 181–218.

annual average of only 28,577.[20] Moreover, the quality of British recruits declined dramatically in the decades before the war. In 1861, for example, the minimum acceptable height for a recruit was 5′8″, but by 1914 the minimum height was only 5′3″.[21] Between 1890 and 1898, over one-fourth of recruits failed to meet at least one of the army's minimum physical standards.[22] As Margaret Levi notes, ''The modal recruit was transformed from a tall, rural fellow who met relatively high physical standards to a shorter, younger, less healthy man, or even boy, from an urban environment.''[23] A governmental inquiry in 1904 concluded that the cause of this trend was that increasingly only those ''who have failed in civilian life offer themselves as recruits.''[24] Rising wages in the civilian sectors of the economy meant that ever fewer well-qualified candidates stepped forward, forcing military recruiters to scrape the bottom of the barrel to maintain numbers and leading them to lament that ''good trade years meant lean recruiting.''[25] In the decade before the war, these problems fueled growing pressures for some system of compulsory, universal military training or conscription.[26]

Similar problems affected the Royal Navy. Although the navy's practice of recruiting boys and youth for fifteen-year engagements meant that it competed only peripherally in the labor market, rising civilian wages exerted significant pressure on the navy.[27] The growing disparity between a sailor's pay and civilian wages caused a growing shortage of experienced sailors and petty officers, because few reenlisted. And because sailors were bound by long-service contracts, their inability to benefit from rising civilian wages bred considerable resentment. According to the First Sea Lord, Winston Churchill, in 1912,

20. French 1982, 24.
21. Skelley 1977, 238.
22. See Skelley 1977, 238; and Spiers 1980, 40.
23. Levi 1997, 54.
24. Cited in Skelley 1977, 239.
25. See French 1982, 24; and Spiers 1980, 55. Hobson estimates the average military wage was approximately 80 percent of the average civilian wage. Hobson 1993, 491, n.62.
26. Adams and Poirer 1987, 1–48.
27. The Royal Navy drew its recruits from three sources. Most were boys (ages 15 3/4 to 16 3/4) or youth (ages 16 3/4 to 18). These boys and youth were trained in seamanship until their eighteenth birthdays, after which they served a fifteen-year engagement. In 1903, the navy also began admitting some adults for five years of noncontinuous service. British Admiralty 1905, 410. Recruiting boys and youth enabled the navy to bind its labor force to long-service commitments before they could be bid away by higher civilian wages. As one Royal Navy document states, ''They [sailors] are fully aware that, but for the fact that they were caught as boys and bound to a fifteen years' engagement before they knew anything about the service, far greater inducements must have been offered them by the State; . . . there is nothing between them and the improved conditions which their comrades in civil life have won but their respect for naval discipline.'' British Admiralty 1912, 2. An untitled draft document is even blunter: ''These boys are put into the Navy by their parents, and have in a great majority of cases no choice as to their profession. The parents are glad to get the boy off their hands . . . and the boy himself is not able to appreciate the service into which he has been entered. . . . [It] is not until they are grown men of 3 or 4 years' service in the Navy that they begin to look around them and find out how grossly inferior their conditions are to those of their equals in civil life. They are then already bound to serve for 12 years. . . . This however is the only branch of the recruiting service which is really prosperous.'' British Admiralty n.d./1912?.

> There is a deep and widespread sense of injustice and discontent throughout all ranks and ratings of the Navy. This discontent . . . is rendered more dangerous by every successful strike for higher wages which takes place on shore. It is rendered more legitimate by the social legislation upon which the Parliament is engaged. . . . It is just this seamen class which was caught and bound to such a long contract so young, who cannot escape from it without severe punishment, and who are the best educated, among whom a serious explosion might occur. . . . We have had great mutinies in the past in the British Navy, and we ought not to continue to bear the responsibility of refusing all redress to grievances so obvious and so harsh.[28]

Nor did conscription insulate France and Germany from similar problems.[29] In France, leftist pressures to ease the burdens of military service forced the government to progressively shorten the length of active duty from five years in the late 1880s to two years by 1905.[30] The army also experienced a sharp rise in insubordination, soldier riots, and desertion. In 1902, some 5,991 men were listed as missing, growing to 13,000 by 1912. In all, some 76,723 citizens shirked their military obligations in the ten years prior to 1912, the equivalent of two army corps.[31] Legal evasion was rampant. To counter the growing shortage, the government ordered conscription boards after 1905 to take recruits who would have been previously rejected as unfit—some 35,000 men in 1907 alone.[32] Rising civilian wages also led many officers to resign or lose interest in their profession. According to *France Militaire* in 1912, ''[Army] pay . . . does not compare, the statistics prove it, with the gains made by workers or most civil servants over the past ten years. . . . As a consequence, the military ideal is devalued, submerged by a sort of bourgeois ideal, tied to the hard facts of everyday life.''[33] Likewise, eroding pay and working conditions caused a growing exodus of noncommissioned officers (NCOs). By 1913, the army was short some 6,000 career sergeants and 15,000 reenlisted corporals, and those that remained were second rate. The most qualified had entered the civilian economy.[34] A 1912 government inquiry concluded that

> Those who believe themselves poorly treated and who can find a civilian job leave the army, these are generally the most intelligent. What is left are mediocre instructors who can do absolutely nothing else. . . . The lower cadres lose little by little their best elements, their elite men, and slowly but surely the corps of NCOs will become what it was 20 years ago, that is, it will contain only NCOs of

28. British Admiralty 1912, 4–5.
29. Remember that, in a time of shorter life expectancies, conscription imposed a considerable burden by taking men away from their civilian lives for up to four years. Stevenson 1996, 6. Rates of pay were so poor in the continental armies that soldiers had to supplement their pay with external sources of income. A French private earned approximately 1 percent of the average civilian wage, a German private 8 percent, and a Russian private 7 percent. Hobson 1993, 490–91.
30. On the translation of rising opportunity costs into political activity, see footnote 6.
31. Porch 1981, 111.
32. Ibid., 202–203.
33. Cited in ibid., 90.
34. Ibid., 197.

limited intelligence, without education, and incapable of being good instructors.[35]

Again, the rising opportunity costs of military service were a significant source of France's personnel problems.[36] According to the government inquiry, ''The NCOs say that they leave the army with regret, and if pay were sufficient and promotion given on merit and impartially, they would not dream of leaving the army.''[37]

In Germany, Chancellor Leo von Caprivi worried in the early 1890s that a labor shortage would leave that country unable to field an army—a constraint that tightened over time.[38] The German army preferred to draw recruits from agricultural backgrounds, believing that urban workers would infect the ranks with democratic and socialist agitation. However, Germany's deepening integration into the world economy drew labor out of the economy's agricultural sectors and into its expanding industries, thus shrinking the pool of agricultural labor available for military use.[39] Between 1888 and 1902, an increase of 5 million in the German population would increase wartime troop strength by 500,000; between 1902 and 1910 a similar increase in population would increase troop strength by only 175,000.[40] Germany responded by freezing the size of its active-duty forces.[41] In 1908, more than half of the 10.4 million men between the ages of twenty and forty-five lacked military training.[42] And as late as 1911, Germany conscripted only 53 percent of available candidates (compared to 84 percent in France and 29 percent in Austria-Hungary), two-thirds of whom had rural origins.[43] The army could not even draw enough troops to fulfill the requirements of the Schlieffen plan, which was designed to offset Germany's strategic weaknesses with an offensive military strategy.[44] As Graf Schlieffen complained, ''We invented universal military service and the idea of a nation in arms, and we have proved to other nations the necessity for introducing these institutions. . . . We keep on invoking our large population, the masses at our bidding—yet the able-bodied among these masses are neither trained nor armed to their full potential.''[45] Helmuth von Moltke (the younger) echoed this sentiment in 1911, writing that Germany was ''surrounded by enemies . . . [but] leaves thousands of its able-bodied men untrained each year, and consequently useless for national defense.''[46]

35. Cited in ibid., 199.
36. Ibid., 197.
37. Cited in ibid., 199.
38. Calleo 1978, 19.
39. Stevenson 1996, 47.
40. Kehr 1977, 67. Germany also suffered a severe shortage of officers. See Berghahn 1973, 8; and Kehr 1977, 65.
41. Between 1877 and 1889, Germany's peacetime strength was 468,000 soldiers, and gradually increased to 557,000 in 1896. Over the next fourteen years, it grew by 50,000 to 607,000. In 1912 and 1913, new army bills increased its numbers to 761,000. Ferguson 1992, 734, and 1994, 155.
42. Stevenson 1996, 47.
43. See Ferguson 1992, 734, and 1994, 155; Posen 1993, 116–17; and Kitchen 1968, 147–48.
44. See Ritter 1958 and 1970, 219.
45. Ritter 1970, 215.
46. Cited in Herrmann 1996, 170.

Turning next to capital, the theory predicts that these countries will experience rising difficulties in mobilizing capital and that these pressures will be most apparent in capital-intensive, naval competition. One of the most striking developments of this era was the skyrocketing cost in Britain and Germany of building warships, the most capital-intensive form of weaponry. (Although France did not play a strong role in naval competition, it experienced a similar rise in the cost of warships. Between 1890 and 1904, the cost of a French battleship rose from £93 to £113 per ton.)[47] Naval armaments generated cost pressures so severe that both governments strained under the pressure of maintaining even constant rates of construction.[48] The reason most commonly cited for this development was the cost of new technology, yet technology provides only a partial explanation.[49] New technologies often resulted in savings as superior capabilities offset higher costs. Although nickel-steel armor cost 50 percent more per ton, its superior capabilities also meant that only half as much was required.[50] Moreover, rising costs were evident even during periods of relative technological stability. In 1891, for example, the British Admiralty estimated that 65–70 percent of the cost overruns for ships being built under the Naval Defence Act of 1889 were attributable to rising prices and only 30–35 percent to improvements in the ships.[51] In Germany, the cost of three armored capital ships being purchased by the navy rose from 4.5 million marks in 1892–93 to 9.6 million marks in 1897–98.[52]

In fact, technological innovation was only one factor influencing the explosion in naval costs.[53] In testimony before the Reichstag, Admiral Alfred von Tirpitz also blamed the rising cost of manufactured inputs, labor costs, and the ambition of private firms for profit as primary reasons for the dramatic increase in the cost of warships.[54] Each is consistent with the notion that an expanding world economy was increasing Germany's difficulty in mobilizing capital and labor for security purposes. Likewise, the British Admiralty estimated that rising prices for manufactured inputs and labor caused the cost of a ''Queen Elizabeth'' class dreadnought to rise 15 per-

47. British Admiralty 1904, 104–105. Naval costs also outstripped the overall growth of government expenditure. Between 1890 and 1904, France's naval budget grew by 70 percent, but overall government spending grew by only 15 percent.

48. See Ritter 1970, 159; and McNeil 1982, 287–88. Britain's rising budgets stemmed both from the growth of foreign naval power, requiring offsetting increases in the size of Britain's fleet, and from dramatically escalating costs in building and sailing *individual* warships. Kennedy 1976. Although the theory I present in this article is agnostic on the first source of rising British naval expenditure, it directly predicts the second.

49. Kennedy 1987, 230.

50. See Weir 1992, 31, n.86.

51. British Admiralty 1891.

52. Weir 1992, 25.

53. In addition, the rapid pace of technological innovation may have been as much a consequence of rising prices as it was a cause of them. For example, Admiral Sir John Fisher, who fathered the Dreadnought revolution, was appointed First Sea Lord in 1904 to rein in the naval budget. Charles Fairbanks writes, ''The new ship designs were part of an overall plan to save money—a programme involving many other measures of economy, such as scrapping ships and using fewer personnel more effectively . . . Fisher sought to make one type of ship do the work of three, saving vast amounts of money. In all history, there have been few such radical changes in force posture.'' Fairbanks 1991, 262; see also Sumida 1989.

54. Weir 1992, 45–46, 88.

cent in 1912.[55] The admiralty attributed this development to the ''boom in trade,'' which caused a ''marked advance in the cost of shipbuilding and other materials.''[56]

More generally, the rising cost of producing weaponry forced the capital abundant states to abandon their domestic monopolies over arms production in the last two decades of the nineteenth century. Converting the state-run armories to the production of steel guns had become too expensive to be politically sustainable, sparking the dramatic growth of private arms firms as these states turned to private industry to supply their armaments needs.[57] Yet private arms firms were not perfect instruments of government policy. Armaments production was a risky business in which government contracts were subject to the whims of international politics. These firms weighed the value of government contracts against the profits that could be earned elsewhere and were often reluctant to sacrifice these profits for uncertain or fickle armaments orders, thus forcing states to compete with other customers.[58] Creusot, for example, refused to expand its artillery-making capacity, forcing the French army to wait over three years for its order of 105-mm howitzers, thus exacerbating one of the army's many weaknesses on the eve of the war.[59] One consequence of the growing reliance on private capital was that ''governments needed the arms firms more than the arms firms needed governments.''[60] And, as adequate productive capacity became ever more expensive for states to maintain, they found themselves forced to permit (and even promote) the private export of armaments, establishing a pattern of arms trading in which private armaments firms became major conduits of weapons, technology, and productive capacity to capital poor states.[61] At best, this was an ambiguous development for the security of the capital abundant states. Although arms sales were useful for diplomacy, the international activities of these firms often contradicted the political and security interests of their governments and promoted the diffusion of capital and technology to other states.[62]

Austria-Hungary: Mixed Effects

Abundant in labor but scarce in land and capital, Austria-Hungary, the theory predicts, will experience increasing difficulties in mobilizing labor and decreasing difficulties in mobilizing capital. Although overlain by this disintegrating empire's nationalist conflicts, this pattern appears evident in its security politics. Because the absolute size of its army was governed by a numerical ceiling set in 1889, Austria-Hungary

55. British Admiralty 1913a.
56. British Admiralty 1913b.
57. See McNeil 1982, 269–85; and Stevenson 1996, 14–30. Again, the most commonly cited reason was the cost of steel-gun technology. But it is plausible that rising capital costs were also a contributing factor.
58. Joll 1992, 148.
59. Porch 1981, 242–43.
60. Joll 1992, 150. Stevenson argues that the relationship was less one-sided because the specialized investments required for arms production made industry dependent on government orders. Stevenson 1996, 14–40.
61. Stevenson 1996, 37.
62. See Joll 1992, 149; and Trebilcock 1973.

actually conscripted a diminishing proportion of the empire's growing population each year. Although this situation increased the pool of potential military recruits over time and thus should have enabled the army to maintain fairly high personnel standards, the army instead confronted a number of severe personnel problems that caused its strength to decay steadily before the war. Compulsory military service generated considerable resentment among Austria-Hungary's workers, which the empire's socialists, like socialists elsewhere in labor abundant Europe, sought to exploit by making antimilitarism a central feature of their attempts to mobilize labor.[63] In non-German areas, socialist antimilitarism often merged with antidynastic nationalism.[64] Both raised severe doubts about the reliability of troops. The government sought to minimize these problems by drawing more heavily on conscripts from agricultural regions, but this strategy failed to provide a lasting solution. Many potential conscripts shirked military duty ''by the simplest method—running away,'' and others often gained exemptions that allowed them to evade military service.[65] The army also suffered from shortages of NCOs, despite enlistment bonuses and a guaranteed civil service post after twelve years of service.[66] Likewise, economic expansion before the war meant fewer officer candidates presented themselves, because the middle classes found better outlets for their talents.[67] The army sought to compensate for these shortages by relying more heavily on reserve officers, but this group as a whole tended to be of much lower quality than career officers.[68] The net effect was eroding military capabilities. In 1911, General Ritter von Auffenberg complained that the army needed more than 30,000 recruits to bring its cadres up to strength and characterized its training and readiness as ''a farce.''[69] To make up the shortfall, the army cannibalized some units to keep others at strength.[70] When war broke out in 1914, Austria-Hungary fielded fewer infantry battalions than it had in 1866, even though its population had grown by nearly 20 million.[71]

In sharp contrast to its labor problems, but as the theory predicts, Austria-Hungary appears to have increased its ability to mobilize capital. In the early 1900s it embarked on an impressive program of rearmament, and arms expenditures rose by some 64 percent between 1906 and 1914. By 1908 the military's purchase of industrial products was 3.8 times its level in 1904. Hungarian industry, in particular, proved readily able to meet these very large increases in armaments orders.[72] The state also shifted from foreign to domestic sources of supply for most of the navy's armament needs, suggesting that the cost of using domestic capital had fallen sufficiently to free

63. Stone 1966, 102. Of course, other factors, such as the army's role in maintaining domestic order, also played a role in socialist antimilitarism.
64. Hanak 1975, 126–27.
65. Stone 1984, 333, and 1975, 71.
66. Rothenberg 1976, 151, n.89.
67. See Rothenberg 1976, 151; and Deak 1990, 120–21.
68. Rothenberg 1976, 108.
69. Foreign Office 1911.
70. Stone 1975, 71, and 1984, 318.
71. Stone 1975, 101, and 1984, 106.
72. Eddie 1989, 870–71.

the Habsburg monarchy from its earlier dependence on foreign suppliers.[73] The most striking development was the transformation of the Habsburg navy from a coastal defense force to a modern Mediterranean naval power. The percentage increase in Austro-Hungarian warship tonnage was second only to that of Germany, and between 1910 and 1914 it outpaced all other great powers.[74] Demand for new armaments was so strong that arms production displaced the railroads as the leading sector of the Austrian economy.[75] And, in contrast to Britain, France, and Germany, but similar to Russia, there is little evidence to suggest that this expansion placed an undue strain on the Habsburg monarchy's finances.[76]

Russia—Mixed Effects

Abundant in land and labor but scarce in capital, Russia, the theory predicts, will experience increasing difficulties recruiting labor into the military, both among its workers and among its peasantry—the holders and intensive users of land—whereas its ability to mobilize capital should grow.

Different branches of Russia's military mobilized their supplies of labor from different sectors of the economy. The navy drew labor largely from the country's urban and industrial centers, because it believed that sailors with industrial backgrounds could master the complex machinery of modern warships better than illiterate peasants.[77] As the theory predicts, the Russian navy experienced an acute shortage of NCOs and a growing shortage of sailors. According to one British intelligence report, reenlistment in the navy was practically nonexistent because ''there is so much demand for skilled labour in the country that nearly all . . . [skilled sailors] are able to obtain well paid situations on shore.''[78] Another report quotes a Russian naval officer who complained that inadequate pay caused ''all the energetic and clever men [to] leave the navy, [whose] places are filled up by the dull and unenterprising.''[79] Inadequate pay and service conditions also made naval conscripts ripe for revolutionary agitation. The navy responded by inducting only those it thought reliable, and in 1905 it even considered temporarily mothballing the fleet by dismissing all but a handpicked few.[80] Yet sailors remained receptive targets of socialist agitation and played a central role in the abortive 1905 revolution.[81] Again, poor pay and condi-

73. See Stevenson 1996, 31–32; and Sondhaus 1994.
74. Kennedy 1987, 203. Between 1900 and 1914, the tonnage of the Austro-Hungarian navy grew 328 percent, and Germany's grew 335 percent. Between 1910 and 1914, Austria-Hungary's warship tonnage grew by 77 percent, Russia's 69 percent, Italy's 53 percent, Germany's 35 percent, Britain's 24 percent, and France's only 10 percent. Despite its rapid growth, Austria-Hungary's navy was still the smallest among the European great powers in 1914. This reflected Austria-Hungary's geographic position as a land-based empire whose only outlet to the sea was a short strip of the Adriatic coast.
75. See Rothenberg 1989, 128; and Good 1984, 166.
76. Eddie 1989, 857–58.
77. Lieven 1983, 108; and Mawdsley 1978, 6–7.
78. British Admiralty 1900, 51.
79. British Admiralty 1901, 10.
80. Bushnell 1985, 77.
81. See Lieven 1983, 108; and Mawdsley 1978, 7–9.

tions of service were a major cause of the navy's personnel problems. A British report found that revolutionary agitators often worked on sailors'‘grievances as regards pay, rations, and clothing, and [that] the unheard of outbreaks in the Black Sea Fleet, and the ferment among the men generally which commenced in 1905 may be attributed directly to this source.’’[82] Even after the revolution, mutinies continued to plague the fleet and by 1914 had fully undermined its effectiveness.[83]

The army's labor supplies came almost exclusively from the peasantry.[84] Although the terms of military service had improved greatly in the late nineteenth century, the army was unable to mobilize sufficient quantities of reliable labor.[85] It suffered an acute shortage of NCOs, and despite reforms in 1907, had fewer NCOs among its ranks in 1914 than the armies of Italy or Austria-Hungary.[86] Similar problems also affected the officer corps, which suffered both from shortages of officers and declines in their quality. In 1907, for example, the Russian infantry had approximately 20 percent fewer officers than it required.[87] Again, the state's difficulties in compensating for the rising opportunity costs of military service appears to be an important reason for this predicament. According to one British report,

> No doubt the officer question is . . . most serious . . . and it is difficult to see how it is to be overcome. The class that furnishes the German officer corps appears not to be forthcoming in Russia. . . . Either a less educated class would have to be drawn on, or else advantages offered that would entail an impracticable expenditure.[88]

Most important, however, were problems among the rank and file. Between 1905 and 1907, simmering soldier discontent caused one-third of the infantry units in European Russia to mutiny, a figure that does *not* include more passive forms of soldier resistance that were even more common.[89] The two primary sources of soldier discontent support the hypothesis that rising returns to land (and hence the rising opportunity costs of military service for the peasantry) were increasing the state's difficulty in mobilizing the peasantry. One source was growing disaffection over the burdens of military service. Soldier demands for higher pay, shorter active duty, and an end to the onerous practice of hiring out conscripts to local landowners, for example, featured prominently in almost every mutiny.[90] The other source of discon-

82. War Office 1907, 160.
83. Lieven 1983, 108–10.
84. Bushnell 1985, 2.
85. In 1874 compulsory military service was reduced from twenty years to six years active service and nine years reserves; in 1888 it was reduced to four years active service and eighteen years reserves. In response to the soldier mutinies of 1905–1907, active duty was reduced to three years, with fifteen years reserves. Wildman 1980, 25–27.
86. See Gatrell 1994, 297; and Jones 1988, 281.
87. Foreign Office 1908. Contrary to popular image, the nobility predominated only at the uppermost ranks of the officer corps. Wildman 1980, 20–23; also Stone 1975, 20–21; Bushnell 1981; and Fuller 1985, 13.
88. Foreign Office 1908, folio 489. See also Fuller 1985, 14.
89. Bushnell 1985, 77.
90. Bushnell 1980, 563–669, and 1985, 100–101.

tent, which sprang from the soldiers'peasant origins, was rising dissatisfaction with the country's pattern of land usage, property rights, and repressive government policies designed to extract the maximum available agricultural surplus. Peasant conscripts were constantly aware that they supported a regime that worked against their interests as agricultural producers.[91] Peasant grievances thus fed the soldier uprisings, causing the pattern of soldier mutinies to mirror the pattern of peasant uprisings that engulfed the countryside.[92] Despite substantial reforms in 1906 that further improved the working conditions of the troops, the army inspired little loyalty. Peasants served only because they feared the repressive capacity of the Russian state, making the ''peasant problem'' the single most crucial issue facing the army command.[93]

We find an entirely different, but predicted, picture when we examine the Russian state's ability to mobilize capital. Russia underwent an extraordinary boom in capital-intensive armaments prior to World War I. It dramatically expanded its railway network from 31,000 miles in 1900 to 46,000 miles by 1914.[94] It also refitted the army with modern artillery, replenished its stocks of weapons and ammunition, and initiated an ambitious program of naval building designed to modernize the fleet after the disastrous losses of the Russo-Japan war.[95] Between 1907 and 1913, army spending increased by 43 percent, whereas navy spending almost tripled. Russia also earmarked approximately 1.3 billion rubles in ''extraordinary'' capital grants for the military between 1908 and 1914—measures that brought recovery to Russia's beleaguered industrialists.[96] The growing availability of capital is further suggested by the government's switch from foreign to domestic sources of supply for most of its armament needs, its modernization of the state-owned arsenals, and the explosive growth of an indigenous arms industry.[97] As Paul Kennedy observed, Russia's ''great *thrust* toward modernization was state inspired and related to military needs—railways, iron and steel, armaments, and so on.''[98] And, in contrast to the capital abundant states of Britain, France, and Germany, but like Austria-Hungary, the accelerating pace and capital intensity of Russia's armament programs created relatively few fiscal problems.[99] Russian economic growth not only generated higher revenues for the government but also enabled the government to readily borrow to cover its expenses.[100] In short, Russia was ''simultaneously powerful *and* weak'' in the years

91. Bushnell 1985. And, as Rogowski notes, these would have also prevented the peasantry from reaping the gains that would otherwise flow to them in an expanding world economy. Rogowski 1989, 49–54.

92. See Wildman 1980, 60; and Bushnell 1985.

93. See Bushnell 1985; Wildman 1980, 38; Fuller 1985, 207; Gatrell 1994, 296; Kennedy 1987, 236; and Stone 1984, 230.

94. Kennedy 1987, 232–33.

95. Gatrell 1990.

96. See Stone 1975, 28–29; and Gatrell 1994, 140, 323.

97. See British Admiralty 1902, 33–34, and 1900, 7; Gatrell 1994, esp. 197–259; and Stevenson 1996, 332–34.

98. See Kennedy 1987, 235 (emphasis in original); Gatrell 1982.

99. Gatrell 1994, 327.

100. Kennedy 1987, 233.

before 1914, possessing the growing ability to mobilize capital for building armaments but increasingly unable to generate the personnel necessary to use them.[101]

Shifting Constraints, the Erosion of European Stability, and the Outbreak of War

Thus far I have suggested that the patterns of shifting economic constraints in pre–World War I Europe parallel the patterns predicted by the theory. But the theory also suggests that the expansion of trade would generally tighten the economic constraints on all of the European great powers, especially in the critical arena of land warfare.[102] Is there evidence that the changing difficulties of mobilizing resources affected the abilities of the great powers to achieve security and, as a consequence, exerted a discernible influence on European stability? In fact, what is most striking about European security is how many of the factors that contributed most to the breakdown of the European system in 1914 were either logical responses to, or follow directly from, the tightening constraints identified by the theory.[103]

States can respond to tightening economic constraints in many ways. Assuming that the state's demand for security is inelastic, one way to keep pace with the rising cost of militarily relevant resources is to progressively increase the size of the military budget. As we have seen, rising input costs exerted significant pressure on British and German naval budgets. In fact, military budgets ballooned in the years before the war, creating the impression of an unstoppable arms race that generated financial burdens so onerous that ''war was accepted almost as a relief.''[104]

Another response is to economize on costly resources. In the decades before the war, each of the powers progressively reduced the length of military service. This development was accompanied in the continental states by an increasing reliance on reserves—that is, on part-time soldiers. Britain experimented with short-service recruitment contracts to make the army more attractive to potential recruits and thus alleviate its chronic labor problems.[105] The continental states moved to shorter terms of duty, in part to ease the burdens of compulsory military service on the masses and thus defuse growing social discontent.[106] The consequences for European stability were pernicious. Even though shorter terms of military service enabled Europe's armies to process more trained soldiers into the reserves each year and thus increase the size of the mobilized army, these trends were uniformly opposed by Europe's

101. Ibid. (emphasis in original).

102. Remember that Austria-Hungary and Russia would face an overall tightening of constraints on their security. Strong armies were more vital than strong navies to the security of these continental states. Because limitations of technology impeded the ready substitution of capital for labor in land warfare, these states' growing ability to mobilize capital for military purposes would not offset their growing inability to mobilize labor.

103. Again, I must stress the preliminary nature of my argument and evidence. One should read this section as a set of plausible hypotheses about the broader consequences of the expanding world economy for European security.

104. Joll 1992, 235. See also Stevenson 1996.

105. Skelley 1977, 248–53.

106. Stone 1984, 154–55.

military elites.[107] France's military leadership saw shorter service as ''a blow against the strength and cohesion of the army. Short service meant more disruptive turnover of men in the units, lower physical standards for soldiers as the army reached deeper into the available pool, more raw recruits to be trained by fewer experienced men, and, in the long run, a lower peacetime strength.''[108] The German general staff likewise believed that only well-trained, active duty troops would be effective in battle and that its increasing reliance on reserves diluted the army's military strength.[109] These trends toward shorter service resulted in larger but less capable European armies, since falling lengths of active military duty and critical shortages of NCOs implied that only the most rudimentary tactics could be effectively drilled into the rank and file.[110] The increasing reliance on reserve forces, moreover, created powerful incentives for preemption and secrecy by placing a strategic premium on the ability to mobilize and take the offensive more rapidly than one's opponents.[111]

States may also respond to shifting economic constraints through doctrinal innovation, that is, by changing the plans that govern how military power is used to achieve strategic goals.[112] Tightening economic constraints would render less and less feasible military doctrines based on intensive and protracted mobilization of economic resources. This development would mitigate against doctrines that relied on strategies of attrition or that extended the probable length, and hence resource requirements, of war.[113] The years before the war thus witnessed both the emergence of the ''short war illusion''—that is, the widespread belief that a protracted war was unsustainable—as well as the general adoption of offensive military doctrines that stressed rapid mobility as the key to victory.[114] The move to highly mobile offensive doctrines, moreover, appears directly related to changing resource constraints. France adopted an offensive strategy to resolve the problem of defending the country with insufficient means.[115] As Douglas Porch notes, France's offensive doctrine (Plan XVII) ''sprang from the army's very lack of confidence, its poor organization, and material weakness. . . . [It] papered over serious army cracks.''[116] Significantly, France's trend toward offensive doctrines dates from the 1880s, when the government first began reducing the terms of conscripted military service.[117] In Germany, Graf Schlieffen

107. For example, under a three-year term of service, a peacetime army of 300,000 soldiers will contain three yearly classes of 100,000 soldiers and process 100,000 soldiers each year into the reserves. Under a two-year term of military service, the army will contain two classes of 150,000 each, thus enabling the army to process 50 percent more soldiers into the reserves each year.

108. Herrmann 1996, 30.

109. Storz 1992, 322–29.

110. See Stone 1975, 45; Stone 1984, 346–52; Gatrell 1994, 297; and Herrmann 1996, 222–23.

111. See Van Evera 1984 and 1986.

112. On military doctrines, see Posen 1984; Snyder 1984b; and Kier 1997.

113. See Liberman 1999; and Storz 1992, 372.

114. Linking the changing economic conditions with the need for a short war, Schlieffen commented that ''[long] wars are impossible at a time when the existence of a nation is founded on the uninterrupted progress of commerce and industry. . . . A strategy of attrition will not do when the maintenance of millions of people requires billions.'' Cited in Snyder 1984b, 108.

115. See Kennedy 1987, 224; and Strachan 1986, 233.

116. Porch 1981, 214, 249.

117. See Snyder 1984a, 29–31, and 1984b, 41–106. Kier argues that the French military adopted a defensive doctrine in the 1930s in response to the introduction of a one-year term of military service by

sought to counteract the growing and unwanted reliance on mobilized reserves by increasing the size of the peacetime army but was turned down by the War Ministry, which insisted that the General Staff should overcome these shortcomings through innovative leadership.[118] The escalating costs of military conflict limited the General Staff's search of doctrines to highly mobile, offensive ones that could ensure rapid, low-cost victory.[119] More generally, Lawrence Stone argues that the widespread belief among military elites in the moral superiority of the ''out-and-out'' attack originated in deep-seated doubts about the battlefield capabilities of rank-and-file soldiers, which were themselves a product of the falling lengths of active military service in which soldiers could be trained, and the chronic shortages of NCOs necessary to turn raw conscripts into effective soldiers and lead them in battle.[120] Because these offensive doctrines provided the mechanism by which the crisis of July 1914 spiraled out of control, they are widely regarded as a key cause of the war.[121]

Another political response by which states may counter the rising opportunity costs of military service is to persuade resource holders to provide resources for lower compensation. In the decades before the war, state-sponsored nationalisms emerged throughout Europe that sought to instill in the populace a sense of personal duty and self-sacrifice for state ends.[122] By identifying the citizen with the state, states gained a relatively inexpensive means of countering the rising opportunity costs of military service. European military elites also sought to overcome domestic political resistance by consciously exaggerating the threats posed by rival states.[123] One reason given for these ideological appeals is bureaucratic pathologies—the desire of militaries for larger budgets, social prestige, or organizational autonomy.[124]

France's socialists. Kier 1997. For several reasons, this supports the general thrust of my argument that the move to highly mobile offensive doctrines in the years prior to World War I was driven in part by tightening economic constraints. First, a defensively oriented, very short-service army was a long-standing goal of France's socialists that was first voiced in the late nineteenth century, a time of rising opportunity costs of military service for French labor. By seeking to limit active duty to one year, the socialists sought to reduce the costs to labor of military service and to make offensive doctrines all but impossible, since conscripts could be trained to do little more than fight from prepared positions. Second, this development would have been disastrous for French security policy before World War I. A doctrine of territorial defense would have left France unable to project force and thus unable to threaten and initiate conflict. This outcome, in turn, would have denied France the ability to practice armed diplomacy, a requisite of great power politics, prevented it from protecting important political and security interests other than its physical territorial integrity, and eviscerated the value of its alliance commitments, especially with Russia. This last point is critical. The Franco-Russian alliance was not only the keystone of French security policy but also was predicated on the need of both countries to engage German forces as quickly as possible, which required offensive capabilities. This suggests that the growing difficulties of mobilizing labor were eroding the foundations of France's grand strategy, pushing it ever closer to that threshold beyond which it could do little more than retreat behind its borders. When viewed in this light, the out-and-out offensive of Plan XVII represented nothing less than the attempt to maintain France's position as a great power. See Krumeich 1984, 17–18; and Sagan 1986.

118. Storz 1992, 322–24.

119. See Ferguson 1992 and 1994; and Ritter 1970. Snyder downplays any economic reasons for Germany's strategy. Snyder 1984b, 139.

120. Stone 1975, 45, and 1984, 346–52.

121. For example, see Van Evera 1984 and 1986; and Snyder 1984a and 1984b.

122. See Posen 1993; and Van Evera 1986.

123. Van Evera 1986.

124. Van Evera 1986, 97, and 1990, 204–209.

This analysis suggests that real shifts in the underlying economics of European security were also to blame. Moreover, even if these appeals overcame tightening economic constraints, they only underscore the importance of the theory, because self-serving nationalist myths and exaggerated external threats are often cited as a cause of the war and, indeed, of war generally.[125]

Finally, although it is widely believed that domestic politics played an important role in the outbreak of the war, scholars have not yet adequately explained the mechanisms by which domestic politics contributed to the breakdown of European relations in 1914. There is not enough credible evidence to support the propositions that ruling elites precipitated war to avert deepening domestic crises or that powerful domestic interest groups propelled Europe into war for economic reasons.[126] Niall Ferguson has suggested that the link is to be found ''where foreign and domestic policies most clearly intersect: fiscal policy,'' and that Germany's growing inability to generate the fiscal resources for defense was a primary cause of the war.[127] I extend Ferguson's insight in two ways. First, I suggest that domestic and international politics intersected not only in the fiscal policies that the great powers used to pay for national defense but also more generally in the growing difficulties that these states (not just Germany) faced in mobilizing domestic economic resources by whatever means.[128] Second, by showing how changing relative prices changed the opportunity costs of military service for different domestic groups and how military issues became attached to other political concerns, I offer the beginnings of a more complete explanation for the domestic politics of European security. For example, the expanding international economy not only fueled the assertive rise of socialism by raising wages throughout labor abundant Europe[129] but also was a source of socialism's strident antimilitarism. The more rising wages increased the opportunity costs of military service, the more burdensome military service became, and hence the more potent socialism's opposition to the military as a means of mobilizing labor behind its demands for fundamental social reform. Thus, the widespread and deep-seated doubts among Europe's military elites about the political loyalty of the rank-and-file troops appear directly related to the growing prosperity, and political strength, that Europe's working classes enjoyed as a result of international economic expansion.[130]

125. See Herrmann 1996, 6; Van Evera 1986 and 1990; and Snyder 1991.

126. On the possible domestic origins of the war, see Mayer 1969; and Joll 1992, chap. 5. On the tenuousness of the evidence, see Ferguson 1994, 141–42. Stevenson considers the question of whether Europe's armaments industries desired war for economic reasons but finds little compelling evidence. Stevenson 1996.

127. See Ferguson 1994, 142, and 1992; and Lamborn 1991.

128. The focus on fiscal policy cannot explain other important manifestations of the growing difficulty of mobilizing resources, such as the French Left's deep-seated opposition to the reintroduction of a three-year term of active military service or the peasant-based soldier mutinies in Russia, to name but two examples.

129. Rogowski 1987 and 1989.

130. See Joll 1992, 70–72, 14; and Storz 1992, 79–84. In Britain, Churchill opposed extending the franchise to enlisted men because he feared that rank-and-file dissatisfaction would lead to assertive class-based demands for better compensation, backed, if necessary, by force. ''No one can possibly doubt,'' he writes, ''that the extension of the vote to 75,000 men dwelling together in large masses under military discipline will produce the immediate development of a class campaign for the improvement of the sol-

But why would Europe go to war if the expansion of trade was tightening the economic constraints on all of the great powers? If the expanding world economy was making it more difficult to prepare for war, would this not make war *less* likely?[131] And if all powers were similarly affected by changing economic circumstances, as my theory suggests, would not the relative balance of power between them remain essentially unchanged? Although the theory cannot explain the *decision* for war (which would require a theory of policy choice; my theory is about shifting constraints), it does help explain why war became more likely over time.

First, these tightening constraints made the European balance more precarious. Many of the responses to tightening economic constraints discussed earlier—such as the increasing reliance on mobilized reserves; the concomitant incentives for rapid mobilization, preemption, and secrecy in a crisis; the shift to offensive doctrines; the growth of state-sponsored nationalism; and the deliberate exaggeration of the hostility of rival states—would not, by themselves, alter the balance of power. But these developments did make the European balance less and less robust, so that even a relatively minor disturbance could tip Europe into war.

Second, the shifting economic constraints vastly complicated the difficulties of accurately assessing the threats posed by rival states.[132] Economic changes often operate in ways that can constrain the choices of decision makers without being fully apparent to outside observers.[133] Many of the manifestations of changing constraints highlighted in this article, such as rising rank-and-file insubordination and resentment over the terms of military service, critical shortages of NCOs as reenlistments dwindled, and reductions in the quality and training of recruits that degraded battlefield capabilities, were acutely felt by each state's military elites as they confronted these problems on a daily basis. But they were less visible to foreign observers because of the veil of secrecy that each state threw over its own security establishment. Likewise, each state possessed private information concerning its own difficulties in mobilizing resources, such as the possibility of political compromises over the military budget or the depth and political strength of domestic opposition to its policies. These created an asymmetry of information in which each state was fully aware of its own difficulties in mobilizing resources, yet forced to make conjectures based on incomplete and sometimes misleading information about the degree to which others suffered from similar trends.

Making accurate assessments was further compounded by the fact that Europe's leaders lacked the conceptual knowledge necessary to link the growing difficulties of mobilizing resources to the deepening integration of the world economy. The effects of changing levels of trade on relative prices and the distributional consequences that

---

diers' conditions. We shall have, in fact, a tremendous trade union made, voting as a trade union, and able to enforce their will on any point they care about sufficiently by the use of lethal weapons.'' British Admiralty 1913c.

131. Nor does the intensification of the pre-war armaments race after 1911 contradict the theory. It predicts that these states would find it increasingly difficult to mobilize resources over time, not that such measures would become impossible.

132. On the importance of perceptions, see Jervis 1976 and 1988.

133. Baldwin 1985, 134.

flowed from them were poorly understood. Not until 1941 did Wolfgang Stolper and Paul Samuelson solve the riddle of who gains and who loses from trade, and even then the consequences of these changes for a state's security were unclear. Nor did common sense compensate for this deficiency, because the expanding international economy affected European security in ways that were counterintuitive: prosperity was not relaxing the constraints on European security; it was tightening them. Even though perceptions were widespread among Europe's state and military elites that growing prosperity was undermining their ability to make war, these elites simply lacked an accurate causal framework that explained this paradox, its various manifestations, and simultaneous emergence in all of the great powers of Europe.

Finally, making accurate assessments was exacerbated by the fact that these states rarely responded to tightening economic constraints in ways that pointed unambiguously to the changing economic environment as their cause. Rather, most state actions were subject to multiple, and often equally compelling, interpretations. As we have seen, many of the oft cited causes of the war—the spiraling growth of defense budgets, the explosion in the size of mobilized armies as states relied ever more heavily on reserves, the shift to highly mobile offensive doctrines that promised rapid victory, the deliberate exaggeration of the hostility of potential rivals, the growth of state-sponsored nationalism—all follow directly from a general tightening of economic constraints on the security politics of the European great powers. Yet when viewed from the perspective of the individual powers, these changes in the behavior of potential rivals could also be (and often were) reasonably interpreted as evidence that these states had become real rivals with hostile intentions.[134]

These perceptual and conceptual difficulties had several important implications. First, these difficulties increased the level of uncertainty in the international system, thus rendering the balance of power, and the behavior of states within it, less and less transparent. This decreased transparency increased the likelihood that states would both misperceive the intentions and behavior of potential rivals and cause them to pursue strategies that were suboptimal or counterproductive. Second, these difficulties fueled anxieties within each state about its own relative decline and created the dangerous situation in which states could rationally hold different beliefs about the changing balance of power. Consequently, concerns about the internal decay of national power and encirclement by hostile states were held throughout Europe.[135] And, as William Wohlforth argues, the fact that states can hold different beliefs about the changing balance of power helps to explain why periods of rapid change often end violently. ''If power relationships were completely transparent,'' Wohlforth writes, ''it is difficult to see why a weaker challenger would provoke war or a weaker dominant nation would insist on defending the status quo. Because power relationships can be opaque and because each side sees a different distribution [of power], each

134. These ambiguities also prevented one from falsifying inaccurate causal frameworks. Because the underlying causes of social behavior are so often ambiguous, Douglass North argues that developing an accurate theory of ideology that explains how and when people adopt, modify, and discard the causal theories that guide behavior is a central problem for the study of economic change. North 1990.

135. Gordon 1974.

can see the other's demands as illegitimate and unjustified by the existing distribution of power.''[136] Finally, without an accurate causal theory to explain the shifting economics of security, especially given the counterintuitive effects of the expanding world economy, Europe's leaders could not make accurate projections about the *future* evolution of the balance of power. For example, Germany's factual knowledge of Russia's troubles in mobilizing labor could not allay its deepening pessimism about the long-term growth of Russian power, because it lacked the conceptual knowledge to conclude that these problems would worsen as Russia's integration into the world economy deepened. Thus, tightening economic constraints created in the individual powers perceptions that ''windows of opportunity'' were closing, based on the knowledge that one's own military capacities were nearing their limits and on the reasonable belief that rivals could draw on substantial reservoirs of resources, given their growing economic prosperity.[137]

Third, the Europe-wide tightening of economic constraints, and the deepening ambiguities about the evolving balance of power that flowed from them, made war more likely by intensifying the security dilemma.[138] With a general tightening of economic constraints, one state's attempts to counteract the internal pressures on its security, either by increasing its efforts to mobilize domestic resources or by forming alliances with other states, will be doubly threatening to the security of its rivals. Not only do the first state's changing security policies represent a potentially threatening increase in military capabilities that rivals cannot attribute to changes in its external security environment, but this state's departure from the status quo occurs at a time when its rivals are themselves becoming less secure from their own growing difficulties in mobilizing resources. Both circumstances raise international tensions by reinforcing the perception that the first state's changing behavior reflects an underlying and potentially hostile change in intentions. Moreover, because the first state's changing security behavior results from growing internal difficulties in mobilizing resources to meet the *existing* level of military threat, attempts by rivals to counterbalance its changing military behavior with similar measures will not restore a stable equilibrium to the international system. These countermeasures will not only negate the first state's attempts to halt the internal erosion of its national power but also will raise the level of external threat against which it must prepare, requiring it to intensify its efforts even further and thus further threaten the security of its rivals. In this way, a general tightening of constraints can generate an accelerating arms race in which each round of arming progressively undermines each state's security and exacerbates the growing difficulties that each state faces in mobilizing resources, pushing each closer to the threshold beyond which it can no longer generate the internal resources necessary for external security.

The years immediately preceding World War I thus witnessed an accelerating arms race in which both sides rapidly approached the very limits of their abilities to gener-

136. Wohlforth 1987, 377.
137. Herrmann 1996, 6.
138. Jervis 1978.

ate resources. Germany's efforts to compensate for its longstanding military deficiencies in the Army Laws of 1912 and 1913 were immediately offset by Russia's Great Programme and France's Three-Year Law. Moreover, the rising pace of armaments was marked on all sides by the extreme political difficulty and tenuousness of these increases. The German Army Laws gave the army only half the number of recruits it needed; required the assent of the SPD (Social Democratic party), which could only be obtained by agreeing to politically unpalatable tax reforms; and represented the maximum degree of finance and resources obtainable from the Reichstag.[139] And, although the German Army Laws were generally interpreted by outside observers as a display of national unity, this has not withstood historical scrutiny. David Stevenson characterizes these army laws as more of a ''last throw'' to halt Germany's deteriorating military position, whereas Lawrence Stone writes, ''It was not surprising that the German military urged war before it was too late, for, with the military law of 1913, and the cumbersome wealth-tax that had paid for it, they thought that they had reached the limit of their resources: better war with Russia than with the Reichstag.''[140] Likewise, the French Three-Year Law was bitterly opposed by the left, was passed only after an intense political struggle in which the government exaggerated German hostility to secure its passage, and had a highly uncertain future given a swing to the left in the legislative elections of May and June 1914. The new head of the French Cabinet, René Viviani, opposed the law and planned to amend it in the autumn, as did the war minister, Adolphe Messimy. Raymond Poincaré thus entered the July crisis knowing that challenges to the Three-Year Law would soon be renewed.[141] As a result, ''in 1914 there was [military] balance but no equilibrium'' in European relations as the incentives grew for both sides to go to war.[142]

Finally, even as all states suffered from an adverse shift in economic constraints, they would have differed both in the degree to which these constraints impinged on their ability to mobilize resources and in the manner and timing with which these tightening constraints manifested themselves within the country's security politics. On the one hand, variations in resource endowments meant that not all states experienced the same degree of relative price changes, causing the balance of power to subtly shift toward those states who were relatively less affected. Russia appears especially important in this regard, for it experienced relaxing constraints on its ability to mobilize capital even as the constraints on mobilizing labor tightened. And it was Russia's armaments programs that ultimately led Germany to conclude that the balance of power was shifting inexorably in Russia's favor.[143] On the other hand, the growing difficulty of mobilizing resources was not a smooth, continuous process that affected all states in exactly the same manner or at exactly the same time but a sporadic and discontinuous process that was refracted through each country's economic, political, and military institutions. The sporadic nature of this process created

139. Ferguson 1992 and 1994.
140. See Stevenson 1996, 298; and Stone 1975, 40.
141. Stevenson 1996, 358–59. See also Krumeich 1984; and Sumler 1970.
142. Stevenson 1996, 418.
143. See, especially, Herrmann 1996.

temporary imbalances of power and opened windows of opportunity that states could try to exploit. In fact, just such a window appeared to open for Germany in 1914. France was engulfed in domestic political and military turmoil over the Three-Year Law, a fact that caused serious strains within the Franco-Russian alliance, whereas Russia was still years away from completing its armaments programmes. Coupled with Germany's own 1913 Army Law, which marked the domestic limits of its ability to mobilize resources, these developments appeared to offer Germany one last chance to reverse its fortunes through a swift preventive war.[144] ''We shall never again strike as well as we do now,'' Moltke argued during the July crisis, ''with France's and Russia's expansion of their armies incomplete.''[145]

In summary, the expansion of the world economy appears to have played an important role in the breakdown of European relations in 1914, suggesting both the plausibility of my theory and justifying the need for further testing and refinement.

Implications and Extensions of the Analysis

Distributive Effects Versus Income Effects

Thus far I have considered the domestic distributive consequences of changing exposure to the international economy. But these changes also affect a country's aggregate income: rising levels of trade raise national income, whereas falling levels lower it. Would not these income effects outweigh the distributional consequences of changing exposure to the international economy? This query seems especially relevant during periods of international economic expansion. For if an expanding world economy generates greater wealth for all countries that participate in it, would not these income effects mitigate any other consequences that trade might have on security? Indeed, one recent study claims that ''trade enhances the potential military power of any country that engages in it.''[146]

Consider the following. Suppose that a country with a gross domestic product (GDP) of $100 must devote $10 of national wealth to its security sector, leaving $90 available for nonsecurity uses. Suppose further that expanding trade increases GDP by 10 percent to $110 and, because the state uses locally abundant resources intensively in the pursuit of security, the cost of security rises by 20 percent to $12.[147] Although rising security costs outpace the overall growth of GDP, these increases are swamped by the aggregate gains in income as national income net security costs rises from $90 to $98. The economy gains an additional $10 in income at the cost of devoting an incremental $2 to security. Although the cost of security has increased, it has also become more affordable.

144. See Stevenson 1996, 418; and Ferguson 1994, 146–47.
145. Ferguson 1994, 146.
146. Gowa and Mansfield 1993, 408.
147. My assumption that security costs rise faster than national income follows from the Stolper-Samuelson theorem. Gains to the holders and intensive users of locally abundant resources will outpace the overall growth of national income, which must also include the losses suffered by the holders and intensive users of the country's scarce resources. Declining trade reverses these effects.

This argument, although plausible, overlooks two important issues. First, national economies do not field militaries, states do.[148] Take the previous example, but assume that security must be paid for with state revenues that are determined by a domestic political process to be 10 percent of GDP. Again suppose that trade increases this country's GDP by 10 percent to $110 and the cost of maintaining a constant level of security by 20 percent to $12. State revenues, however, rise to only $11. Even though the growth of national income swamps the increase in security costs, the expansion of trade generates a fiscal crisis in which the state must either reconfigure its security policies to compensate for changed economic circumstances or strike new political bargains with domestic elites over the level (and incidence) of taxation. But whether these new bargains are politically feasible is an open question that hinges on the structure of the country's domestic political institutions and the interests of the actors that occupy them.[149]

Second, this argument also overlooks the relative nature of power and security. Although trade may enhance the military power of all states that participate in the international economy, it will not do so equally. States that are poorly endowed with militarily relevant resources will benefit both because trade has increased the economic surplus they may capture for military purposes and because it has increased their ability to mobilize those resources most necessary for military power. States that are abundantly endowed with these resources will find that rising prices partly offset any gains in national income the state may capture. In relative terms, this scenario shifts the balance of power toward the state whose economy is scarce in militarily relevant resources. For example, although increased trade may enable both Britain and Russia to spend more on their militaries, Russia benefits more because cheaper capital confers a bigger advantage on its military capabilities than cheaper land does on Britain's.[150]

A focus on the domestic distributional consequences of changing exposure to trade also provides valuable insights into periods of international economic contraction. A corollary of the conventional wisdom that increasing trade enhances a country's military potential is that decreasing trade should have the opposite effect. Notice how the most glaring anomaly to this corollary, the remarkable armament of Nazi Germany during the Great Depression, is readily explicable by the theory. Germany's abundance in labor and capital implies that the collapse of international trade would increase its ability to mobilize these resources by causing returns to these resources to fall faster than the contraction of national income.[151] Notice, too, how the distribu-

148. In other words, one must make a critical distinction between *national power*—the size and composition of a country's national resources—and *state power*—the capacity of the state to harness these resources in international politics.

149. Wilhelmine Germany demonstrates the importance of this point. To increase military spending required the assent of the Reichstag. Yet most parties opposed increasing the military budget (the SPD because of its strong antimilitarism and the Conservative parties because of their opposition to higher taxes). As a result, ''Germany faced the danger of being outspent, not because of a lack of money in the country, but because of an inability to create political coalitions that could tap it.'' See Stevenson 1996, 298; and Ferguson 1992 and 1994.

150. I thank an anonymous referee for suggesting this point.

151. See footnote 147.

tional effects of a contracting international economy help to resolve another paradox: the vast amount of resources mobilized by the European states for World War I even though the theory suggests that they suffered tightening economic constraints prior to the conflict. By disrupting the flow of international commerce, the onset of hostilities in 1914 would reduce returns to labor in all powers and capital in Britain, France, and Germany, thus making it easier for these states to mobilize these resources.[152]

In summary, the most important issue for understanding how a changing world economy affects the state's security politics is not its effect on national income, but its effect on the state's ability to mobilize resources. This problem involves at least three important issues: (1) the resources used by the state and how these are affected by changing exposure to the international economy, (2) the institutions and practices by which the state mobilizes resources and how these determine the manner and timing in which the state experiences shifting economic constraints, and (3) the state's ability to adjust its security policies to changing economic circumstances.

Relative Gains, Trade, and International Stability

Realists often argue that the growth of trade undermines international stability by upsetting the balance of power. Simply put, trade creates asymmetries in wealth in the international system that, in turn, translate into asymmetries in power. Thus, those states whose economies gain relatively more from trade find their power enhanced at the expense of those whose economies gain relatively less.[153]

The theory I develop in this article modifies this argument in at least two important ways. First, it suggests that the expansion of trade can affect military capabilities in ways that are *independent* of the relative gains in wealth that states capture. A state whose security relies on resources whose prices are rising rapidly under the impact of trade may find that its security has diminished, regardless of whether its economy has grown relative to those of its trading partners, whereas a state that relies on resources whose prices are falling may find its security enhanced, even if its economy gains relatively less from trade than other states. Consider how this modification helps resolve Germany's ''irrational'' fears of Russia's capital-intensive armament programs before World War I. Kennedy argues that Germany was actually increasing its economic and industrial wealth relative to Russia, implying that there was little material basis for Germany's perception that the balance of power was shifting decisively in Russia's favor.[154] Yet my theory predicts that even if Germany's wealth was rising faster than Russia's, Germany's ability to mobilize capital would not. Rising returns to capital would increase Germany's difficulty in mobilizing this resource, whereas Russia would see returns to capital fall and its ability to mobilize this resource further amplified by the overall growth of its economy. Recent debates about

152. I do not claim that the breakdown of the international economy was the only reason why the European states could mobilize vast amounts of resources for the war. Clearly, the war itself played a major role. Exploring the mobilization efforts during the war may be a way of extending this analysis.

153. See Mansfield 1994, 123; Viner 1948; Gilpin 1981 and 1987; and Grieco 1990.

154. Kennedy 1987, 235–38.

relative gains have thus overlooked an important mechanism by which trade influences security.[155]

Second, the realist argument suggests that the expansion of trade influences international stability primarily through its impact on the balance of power. But as we have seen, trade's impact on the balance of power is only one path by which trade may influence international stability. By affecting the capacities of states to mobilize domestic resources, the expansion of trade may provoke state responses, such as developing new force structures or military doctrines that compensate for changing economic circumstances. It may also exacerbate the perceptual difficulties that states face, leading them to alter assessments about their own security as well as about the intentions and behavior of potential rivals. And, as the pre–World War I period so vividly demonstrates, these national reactions to changing economic circumstances can interact in ways that ultimately undermine the stability of international relations, *even when the economic changes do not themselves appreciably alter the existing balance of power*.

Hegemonic Theory and the Rise and Fall of Great Powers

At the heart of hegemonic theory lies a paradox. By facilitating the expansion of international economic activity, the hegemon promotes its own demise, for the growth of the world economy ultimately erodes the economic foundations of its military power.[156] Assuming that the hegemon is abundantly endowed with those resources most conducive to military competition, the theory I have developed here shows why this must be so. International economic expansion increases the hegemon's difficulty in mobilizing its locally abundant resources and thus leads directly to the hegemonic dilemma. On the one hand, should the hegemon seek to reduce its military's reliance on the economy's abundant resources, either by shrinking the size of the military or by altering the resource composition of these forces, it will see its military capabilities decline. On the other hand, should the hegemon desire to maintain the present size and structure of its military forces, it will face not only growing difficulties in mobilizing the resources necessary to sustain this role but also a growing drag on the economy. The hegemon's unwillingness to release locally abundant resources from its military establishment means that its economy cannot specialize fully according to comparative advantage.[157]

It is difficult to construct a more succinct explanation for why international economic expansion necessarily undermines the hegemon's power. Compare this explanation with the most commonly cited explanations: uneven rates of economic produc-

155. See Grieco 1990; Grieco, Powell, and Snidal 1993; and Powell 1994.

156. Gilpin 1987, 77–78, and 1981.

157. Remember that the costs to the hegemon's economy of its military role is not measured by the size of the military budget, but by the opportunity cost of not employing resources used for security in their most productive alternative uses. Melmen and Markusen and her colleagues argue that these costs have been profound for the United States. See Melmen 1986; and Markusen et al. 1991.

tivity and growth,[158] domestic rent-seeking groups that impede economic efficiency,[159] and the diffusion of technology and productive capital to rising states.[160] The first two explanations are unrelated to the expansion of the international economy and lack strong foundations in deductive theory that show why they necessarily disadvantage the hegemon.[161] The third explanation, the diffusion of productive capital, considers only a single dimension of a state's resource base. Although diffusion correctly predicts that an expanding world economy prior to World War I would increase Britain's difficulties in mobilizing capital and decrease Russia's, it fails to predict the growing difficulties that both states faced in mobilizing labor as well as Russia's added difficulties in mobilizing the peasantry.

Moreover, the fundamental source of the hegemon's economic decay arises not from its ''hegemony''—its dominant position in the international political system or its worldwide political commitments—but from the nature of its resource endowment. This view implies that all states with similar endowments, not just the hegemon, will experience the decay of national power as a result of hegemonic openness. It also implies that hegemons face two types of challengers. Rising challengers are scarcely endowed with militarily relevant resources. These states find that international economic expansion not only increases their ability to mobilize resources but also allows them to specialize more fully according to their comparative advantage, because the military sector competes only peripherally for the economy's abundant resources. Declining challengers are abundantly endowed with militarily relevant resources and confront a dilemma similar to the hegemon's. They find that international economic expansion increases the difficulty of maintaining their military power over time and that, like the hegemon, they become trapped between their international ambitions and the growing difficulty of generating the resources to pursue them.

Notice how the pattern of constraints experienced by the declining challenger succinctly captures the central contours of Germany's challenge to British hegemony: the rapid escalation of Germany's naval costs beginning in the 1890s, well *before* the Anglo-German naval arms race; Germany's growing difficulties in mobilizing resources for military purposes more generally; and the growing despair of its state and military elites that power was slipping from their grasp.[162] In other words, Germany, like Britain, entered the twentieth century not as a rising power, but as a declining one.

Alternate Approaches

I have used the Stolper-Samuelson theorem to explore how changes in the costs and risks of international trade influence the security politics of states. This theorem, and

158. See Gilpin 1981 and 1987; Kennedy 1987; and Organski and Kugler 1980.
159. See Gilpin 1981 and 1987; and Olson 1982.
160. See Gilpin 1981 and 1987; and Kennedy 1987.
161. Rogowski 1983.
162. The rise in German naval costs began in the 1890s, around the time that Germany became a capital-rich economy. Rogowski 1989, 40.

the Heckscher-Ohlin model from which it is derived, is one of three trade theoretic approaches that link changes in the international economy to changes in domestic relative prices.[163] Because other approaches yield different predictions about the impact of a changing international economy on domestic relative prices, they also yield different predictions about how these changes affect the state's ability to mobilize resources. Although I cannot treat these alternate approaches in detail, I would like to note some key ways in which they differ from the approach I have explored.

The Ricardo-Viner approach differs critically from the Heckscher-Ohlin approach by assuming that some factors will be specific to certain uses. Because specific factors cannot be readily redeployed in response to changing prices, returns to these factors rise and fall with the fortunes of the sectors where they are employed, causing them to bear the full brunt of changing demand for their products. Mobile factors accrue neither windfall gains or losses as they shift into and out of sectors in response to changing prices.[164] The Ricardo-Viner approach is a sectoral approach to trade because it focuses on the impact of trade on the fortunes of specific sectors or industries. It is also often termed a short-run model of trade because factor mobility increases over time.

The Ricardo-Viner approach yields at least two important implications. It suggests, first, that states will be affected by changing international economic conditions only to the extent that the affected sectors are themselves important to the state's military power. Hence, rising demand for British merchant ships would directly constrain the state's ability to build warships by raising the demand for the country's ship-building capacity; rising demand for British textiles would not. Second, this approach suggests that states, at least over the short run, can insulate themselves from adverse changes in relative prices by fostering the formation of highly specific assets in their arms industries. As a consequence, changes in the costs and risks of international trade may exert a discernable influence on the security politics of states only over the long run as assets become mobile between sectors.

Another approach focuses on firm characteristics such as increasing returns to scale (IRS).[165] Here the expansion of world markets allows firms to both increase output *and* lower prices. Although this perspective, like the Ricardo-Viner perspective, predicts that an expansion or contraction of trade will affect the state's military power to the extent that it relies on the specific goods produced by this firm, the direction of the effect is reversed. Here the state benefits from the expansion of trade to the extent that expansion lowers the cost of key product inputs into its military sector, and it loses from the contraction of trade to the extent that lower levels of output cause the prices of these products to rise.

Although all three perspectives yield important insights into how a changing world economy affects the state's ability to mobilize resources, I believe that an approach based on the Stolper-Samuelson theorem offers three advantages. First, shifts in power

163. See Alt et al. 1996; and Frieden and Rogowski 1996.
164. Frieden and Rogowski 1996, 38.
165. Alt et al. 1996.

in the international system generally take place over many years or decades. This observation suggests the appropriateness of using longer-run models of trade, such as the Stolper-Samuelson theorem, to analyze this process.[166] Second, because states often shelter their security sectors from international economic competition, it may *only* be over the longer term that trade-related changes in factor prices substantially alter the economic constraints on security. Again, this observation suggests the appropriateness of using longer-run models. Third, to build military power, states must often act in factor markets rather than product markets. Soldiers require labor. Likewise, to promote the formation of, or continued investment in, armaments industries requires states to offer a return on capital commensurate to the returns capital would earn elsewhere.

Finally, let me close by making two important points. The first is that the three trade theoretic perspectives should be viewed as complementary.[167] They may all be valid but for different historical eras, over different intervals of time, or under different prevailing military technologies. Exploring when each of these perspectives is most appropriate provides a potentially rich area of inquiry for scholars of international political economy and international security. Second, regardless of which perspective one uses, one should not lose sight of the broader contribution of this article, which is to map out a new approach for analyzing the consequences of a changing world economy for the security politics of states.

Conclusion

The theory developed in this article not only appears surprisingly accurate in describing the shifting pattern of economic constraints in pre–World War I Europe but also has broad implications for a number of issues central to the study of international political economy and international security. Clearly the theory does not explain all or even most aspects of a state's security behavior. One cannot deny the central importance of the distribution of power in the international system or the historical legacies that may shape the perceptions and choices of key leaders. It is also equally clear that the argument is still in its early stages. Nonetheless, the theory's preliminary empirical accuracy and broad implications suggest that I have tapped a fundamental relationship about the ways in which a changing world economy affects the security politics of states.

One of the key challenges for international relations after the Cold War is to integrate the fields of international political economy and international security.[168] Not only will this integration lead to better knowledge of the relationships between the international economy and national and international security, but this knowledge itself is essential to managing the changing structure and deepening economic inte-

166. Ibid., 698.
167. Frieden and Rogowski 1996.
168. Kirshner 1998.

gration of the present international system. It is my hope to have contributed to that process.

References

Adams, R. J. Q., and Philip P. Poirier. 1987. *The Conscription Controversy in Great Britain, 1900–1918*. Houndmills, Basingstoke, Hampshire: Macmillan.

Alt, James E., Jeffry Frieden, Michael J. Gilligan, Dani Rodrik, and Ronald Rogowski. 1996. The Political Economy of International Trade: Enduring Puzzles and an Agenda for Inquiry. *Comparative Political Studies* 29 (6):689–717.

Baldwin, David A. 1985. *Economic Statecraft*. Princeton, N.J.: Princeton University Press.

Berghahn, Volker. 1973. *Germany and the Approach of War in 1914*. New York: St. Martin's Press.

British Admiralty. 1891. Secretary of the Admiralty to Secretary of the Treasury. 19 March 1891, Public Record Office (PRO), ADM 116/324.

———. 1900. Intelligence Department. Russia. Baltic and Black Seas. Fleet, Dockyards, &c. (No. 567), PRO, ADM 231/31.

———. 1901. Intelligence Department. The Status of Naval Engineers in France, Russia, Germany, and United States (No. 613), June, PRO, ADM 231/33.

———. 1902. Intelligence Department. Reports on Foreign Naval Affairs (No. 651), PRO, ADM 231/35.

———. 1904. Intelligence Department. Reports on Foreign Naval Affairs. Vol. I. (No. 712), PRO, ADM 231/39.

———. 1905. *Naval Necessities: Vol. II*. PRO, ADM 116/3093.

———. 1912. Pay of Men of the Royal Navy. London, PRO, ADM 116/1182.

———. n.d./1912?. Untitled draft document on British naval recruiting. Admiralty Yacht, PRO, ADM 116/1661.

———. 1913a. Note by the Third Sea Lord on the Increase in Size and Cost of Capital Ships, PRO, ADM 1/8275.

———. 1913b. Draft of First Annual Report on the Finance Committee's Operations, October 1912–October 1913, PRO, ADM 1/8275.

———. 1913c. The Military Vote, 7 January 1913, PRO, ADM 116/3151.

Bushnell, John. 1980. Peasants in Uniform: The Tsarist Army as a Peasant Society. *Journal of Social History* 13 (4):565–76.

———. 1981. The Tsarist Officer Corps, 1881–1914: Customs, Duties, Inefficiency. *American Historical Review* 86 (4):753–80.

———. 1985. *Mutiny amid Repression: Russian Soldiers in the Revolution of 1905–1906*. Bloomington: Indiana University Press.

Calleo, David. 1978. *The German Problem Reconsidered: Germany and the World Order, 1870 to the Present*. Cambridge: Cambridge University Press.

Corden, W. M. 1974. *Trade Policy and Economic Welfare*. Oxford: Clarendon Press.

Deak, Istvan. 1990. *Beyond Nationalism: A Social and Political History of the Habsburg Officer Corps, 1848–1918*. New York: Oxford University Press.

Eddie, Scott M. 1989. Economic Policy and Economic Development in Austria-Hungary, 1867–1913. Chap. 12 in *The Cambridge Economic History of Europe*, vol. 8, *The Industrial Economies: The Development of Economic and Social Policies*, edited by Peter Mathias and Sidney Pollard, 814–86. Cambridge: Cambridge University Press.

Ethier, Wilfred J. 1984. Higher Dimensional Issues in Trade Theory. In *Handbook of International Economics*, vol. 1, edited by Ronald W. Jones and Peter B. Kenen, 131–84. Amsterdam: Elsevier Science Publishers B.V.

Fairbanks, Charles H., Jr. 1991. The Origins of the *Dreadnought* Revolution: A Historiographical Essay. *International History Review* 13:246–72.

Ferguson, Niall. 1992. Germany and the Origins of the First World War: New Perspectives. *The Historical Journal* 35 (3):725–52.

———. 1994. Public Finance and National Security: The Domestic Origins of the First World War Revisited. *Past and Present* 142 (February):141–68.
Foreign Office. 1908. Sir A. Nicholson to Sir Edward Grey, Annual Report on Russia for 1907, 15 February 1908, PRO, FO 327/727.
———. 1911. Theo Russell to Sir Edward Grey. Report of Count Arenthal's Expose Before the Delegations of the Austrian and Hungarian Parliaments, 29 December 1911, PRO, FO 371/1296.
French, David. 1982. *British Economic and Strategic Planning 1905–1915*. London: G. Allen and Unwin.
Frieden, Jeffry A. 1991. *Debt, Development, and Democracy: Modern Political Economy and Latin America, 1969–1985*. Princeton, N.J.: Princeton University Press.
Frieden, Jeffry A., and Ronald Rogowski. 1996. The Impact of the International Economy on National Policies: An Analytical Overview. Chap. 2 in *Internationalization and Domestic Politics*, edited by Robert O. Keohane and Helen V. Milner, 25–47. Cambridge: Cambridge University Press.
Fuller, William C. 1985. *Civil Military Conflict in Imperial Russia, 1881–1914*. Princeton, N.J.: Princeton University Press.
Gatrell, Peter. 1982. Industrial Expansion in Tsarist Russia, 1908–1914. *Economic History Review*, 2d ser., 35 (1):99–110.
———. 1990. After Tsushima: Economic and Administrative Aspects of Russian Naval Rearmament, 1905–1913. *Economic History Review*, 2d ser., 43 (2):255–70.
———. 1994. *Government, Industry, and Rearmament in Russia, 1900–1914: The Last Argument of Tsarism*. Cambridge: Cambridge University Press.
Gilpin, Robert. 1981. *War and Change in World Politics*. Cambridge: Cambridge University Press.
———. 1987. *The Political Economy of International Relations.* Princeton, N.J.: Princeton University Press.
Good, David F. 1984. *The Economic Rise of the Habsburg Empire, 1750–1914.* Berkeley: University of California Press.
Gordon, Michael R. 1974. Domestic Conflict and the Origins of the First World War: The British and German Cases. *Journal of Modern History* 46 (2):191–226.
Gourevitch, Peter. 1978. The Second Image Reversed: The International Sources of Domestic Politics. *International Organization* 32 (4):881–911.
———. 1986. *Politics in Hard Times: Comparative Responses to International Economic Crises*. Ithaca, N.Y.: Cornell University Press.
Gowa, Joanne, and Edward D. Mansfield. 1993. Power Politics and International Trade. *American Political Science Review* 87 (June):408–20.
Grieco, Joseph M. 1990. *Cooperation Among Nations: Europe, America, and Non-Tariff Barriers to Trade*. Ithaca, N.Y.: Cornell University Press.
Grieco, Joseph M., Robert Powell, and Duncan Snidal. 1993. Controversies: The Relative-Gains Problem for International Cooperation. *American Political Science Review* 87 (3):729–43.
Hanak, Peter. 1975. Economics, Society, and Sociopolitical Thought in Hungary During the Age of Capitalism. *Austrian History Yearbook* 11:113–38.
Herrmann, David G. 1996. *The Arming of Europe and the Making of the First World War*. Princeton, N.J.: Princeton University Press.
Hobson, John M. 1993. The Military Extraction Gap and the Wary Titan: The Fiscal-Sociology of British Defence Policy, 1870–1913. *Journal of European Economic History* 22 (3):461–506.
Jervis, Robert. 1976. *Perception and Misperception in International Politics.* Princeton, N.J.: Princeton University Press.
——— . 1978. Cooperation Under the Security Dilemma. *World Politics* 30 (2):167–214.
———. 1988. War and Misperception. *The Journal of Interdisciplinary History* 18 (4):675–700.
Joll, James. 1992. *The Origins of the First World War*. 2d ed. New York: Longman.
Jones, David R. 1988. Imperial Russia's Forces at War. Chap. 8 in *Military Effectiveness*, vol. 1, *The First World War*, edited by Allan R. Millett and Williamson Murray, 249–328. Boston: Allen and Unwin.
Kehr, Eckart. 1977. *Economic Interest, Militarism, and Foreign Policy: Essays on German History.* Berkeley: University of California Press.
Kennedy, Paul. 1976. *The Rise and Fall of British Naval Mastery*. London: Allen Lane.

———. 1987. *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000*. New York: Random House.
Keohane, Robert O., and Helen V. Milner, eds. 1996. *Internationalization and Domestic Politics*. New York: Cambridge University Press.
Kier, Elizabeth. 1997. *Imagining War: French and British Military Doctrine Between the Wars*. Princeton, N.J.: Princeton University Press.
Kirshner, Jonathan. 1998. Political Economy in Security Studies After the Cold War. *Review of International Political Economy* 5 (1):64–91.
Kitchen, Martin. 1968. *The German Officer Corps, 1890–1914*. Oxford: Clarendon Press.
Krumeich, Gerd. 1984. *Armaments and Politics in France on the Eve of the First World War: The Introduction of Three-Year Conscription, 1913–1914*. Translated by Stephen Conn. Dover, N.H.: Berg Publishers.
Lamborn, Alan C. 1991. *The Price of Power: Risk and Foreign Policy in Britain, France, and Germany*. Boston: Unwin Hyman.
Leamer, Edward E. 1984. *Sources of International Comparative Advantage: Theory and Evidence*. Cambridge, Mass.: MIT Press.
Levi, Margaret. 1997. *Consent, Dissent, and Patriotism*. Cambridge: Cambridge University Press.
Lieven, D. C. B. 1983. *Russia and the Origins of the First World War*. New York: St. Martin's Press.
Liberman, Peter. 1999. Economic Incentives for Expansion and War. *Security Studies* 9 (summer). Forthcoming.
McNeil, William H. 1982. *The Pursuit of Power: Technology, Armed Force, and Society Since A.D. 1000*. Chicago: University of Chicago Press.
Mansfield, Edward D. 1994. *Power, Trade, and War*. Princeton, N.J.: Princeton University Press.
Markusen, Ann, Scott Campbell, Peter Hall, and Sabina Deitrick. 1991. *The Rise of the Gunbelt: The Military Remapping of Industrial America*. Oxford: Oxford University Press.
Mawdsley, Evan. 1978. *The Russian Revolution and the Baltic Fleet: War and Politics, February 1917–April 1918*. New York: Barnes and Noble.
Mayer, Arno J. 1969. Internal Causes and Purposes of War in Europe, 1870–1956: A Research Assignment. *The Journal of Modern History* 41 (3):291–303.
Melman, Seymour. 1986. Limits of Military Power: Economic and Otherwise. *International Security* 11 (1):72–87.
Midford, Paul. 1993. International Trade and Domestic Politics: Improving on Rogowski's Model of Political Alignments. *International Organization* 47 (4):535–64.
North, Douglass C. 1990. *Institutions, Institutional Change, and Economic Performance*. Cambridge: Cambridge University Press.
Olson, Mancur. 1982. *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities*. New Haven, Conn.: Yale University Press.
Organski, A. F. K., and Jacek Kugler. 1980. *The War Ledger*. Chicago: University of Chicago Press.
Porch, Douglas. 1981. *The March to the Marne: The French Army, 1871–1914*. Cambridge: Cambridge University Press.
Posen, Barry R. 1984. *The Sources of Military Doctrine: France, Britain, and Germany Between the World Wars*. Ithaca, N.Y.: Cornell University Press.
———. 1993. Nationalism, the Mass Army, and Military Power. *International Security* 18 (2):80–124.
Powell, Robert. 1994. Anarchy in International Relations Theory: The Neorealist-Neoliberal Debate. *International Organization* 48 (2):313–44.
Ritter, Gerhard. 1958. *The Schlieffen Plan: Critique of a Myth*. New York: Frederick A. Praeger.
———. 1970. *The Sword and the Scepter: The Problem of Militarism in Germany. Volume II: The European Powers and the Wilhelminian Empire, 1890–1914*. Coral Gables, Fla.: University of Miami Press.
Rogowski, Ronald. 1983. Structure, Growth, and Power: Three Rationalist Accounts. *International Organization* 37 (4):713–38.
———. 1987. Political Cleavages and Changing Exposure to Trade. *American Political Science Review* 81 (4):1121–37.
———. 1989. *Commerce and Coalitions: How Trade Affects Domestic Political Alignments*. Princeton, N.J.: Princeton University Press.

Rosen, Stephen Peter. 1991. *Winning the Next War: Innovation and the Modern Military*. Ithaca, N.Y.: Cornell University Press.

Rothenberg, Gunther E. 1976. *The Army of Francis Joseph*. West Lafayette, Ind.: Purdue University Press.

———. 1989. The Austro-Hungarian Campaign Against Serbia in 1914. *The Journal of Military History* 53 (2):127–46.

Sagan, Scott D. 1986. 1914 Revisited: Allies, Offense, and Instability. *International Security* 11 (2): 151–75.

Skelley, Alan Ramsay. 1977. *The Victorian Army at Home: The Recruitment and Terms and Conditions of the British Regular, 1859–1899*. London: Croom-Helm.

Snyder, Jack. 1984a. Civil-Military Relations and the Cult of the Offensive, 1914 and 1984. *International Security* 9 (1):108–46.

———. 1984b. *The Ideology of the Offensive: Military Decision Making and the Disasters of 1914*. Ithaca, N.Y.: Cornell University Press.

———. 1991. *Myths of Empire: Domestic Politics and International Ambition*. Ithaca, N.Y.: Cornell University Press.

Sondhaus, Lawrence. 1993. The Austro-Hungarian Naval Officer Corps, 1867–1918. *Austrian History Yearbook* 24:51–78.

———. 1994. *The Naval Policy of Austria-Hungary, 1867–1918: Navalism, Industrial Development, and the Politics of Dualism*. West Lafayette, Ind.: Purdue University Press.

Spiers, Edward M. 1980. *The Army and Society, 1815–1914*. London: Longman.

Stevenson, David. 1996. *Armaments and the Coming of War: Europe 1904–1914*. Oxford: Clarendon Press.

Stolper, Wolfgang F., and Paul A. Samuelson. 1941/42. Protection and Real Wages. *Review of Economic Studies* 9:58–73.

Stone, Norman. 1966. Army and Society in the Habsburg Monarchy, 1900–1914. *Past and Present* 33:95–111.

———. 1975. *The Eastern Front, 1914–1917*. New York: Charles Scribner's Sons.

———. 1984. *Europe Transformed: 1878–1919*. Cambridge, Mass.: Harvard University Press.

Storz, Dieter. 1992. *Kriegsbild und Rüstung vor 1914: Europäische Landstreitkräfte vor dem Ersten Weltkrieg*. Berlin: E. S. Mittler und Sohn.

Strachan, Hew. 1986. The First World War: Causes and Course. *The Historical Journal* 29 (1):227–55.

Sumida, Jon Tetsuro. 1989. *In Defence of Naval Supremacy: Finance, Technology and British Naval Policy, 1889–1914*. Boston: Unwin Hyman.

Sumler, David E. 1970. Domestic Influences on the Nationalist Revival in France, 1909–1914. *French Historical Studies* 6 (4):517–37.

Tilly, Charles. 1990. *Coercion, Capital, and European States, A.D. 990–1990*. Cambridge, Mass.: Basil Blackwell.

Trebilcock, Clive. 1973. British Armaments and European Industrialization, 1890–1914. *The Economic History Review*, 2d ser., 26 (2):254–72.

Van Evera, Stephen. 1984. The Cult of the Offensive and the Origins of the First World War. *International Security* 9 (1):58–107.

———. 1986. Why Cooperation Failed in 1914. In *Cooperation Under Anarchy*, edited by Kenneth A. Oye, 80–117. Princeton, N.J.: Princeton University Press.

———. 1990. Primed for Peace: Europe After the Cold War. *International Security* 15 (3):7–57.

Viner, Jacob. 1948. Power Versus Plenty as Objectives of Foreign Policy in the Seventeenth and Eighteenth Centuries. *World Politics* 1 (1):1–29.

War Office. 1907. The Military Resources of the Russian Empire. PRO, WO 33/419.

Weir, Gary E. 1992. *Building the Kaiser's Navy: The Imperial Navy Office and German Industry in the von Tirpitz Era, 1890–1919*. Annapolis, Md.: Naval Institute Press.

Wildman, Allan K. 1980. *The End of the Russian Imperial Army.* Vol. 1, *The Old Army and the Soldier's Revolt (March–April 1917)*. Princeton, N.J.: Princeton University Press.

Wohlforth, William C. 1987. The Perception of Power: Russia in the Pre-1914 Balance. *World Politics* 39 (3):353–81.