11-7-2023

HM 31: New Interpretations in Naval History

Brian VanDeMark

New Interpretations in Naval History

Selected Papers from the Twentieth McMullen Naval History Symposium Held at the U.S. Naval Academy 14–15 September 2017

Edited by Brian VanDeMark

COVER

Adapted from World War I Battle, Ship Torpedoed, *by Charles Malfroy, gouache on paper, courtesy of the Navy Art Collection, Naval History and Heritage Command. The inset (and title-page background image) is a detail of a group photo of the midshipmen of the U.S. Naval Academy's class of 1865 taken in front of the Atlantic House hotel, which the Academy leased when it moved to Newport, Rhode Island, during the Civil War. The class of 1865 was the only one trained entirely in Newport. Three of its members later returned to that city as presidents of the Naval War College (Caspar Goodrich, Charles Stockton, and French Chadwick) and one as a faculty member (Bowman H. McCalla). Naval War College Museum (original in U.S. Naval Academy Museum).*

New Interpretations in Naval History

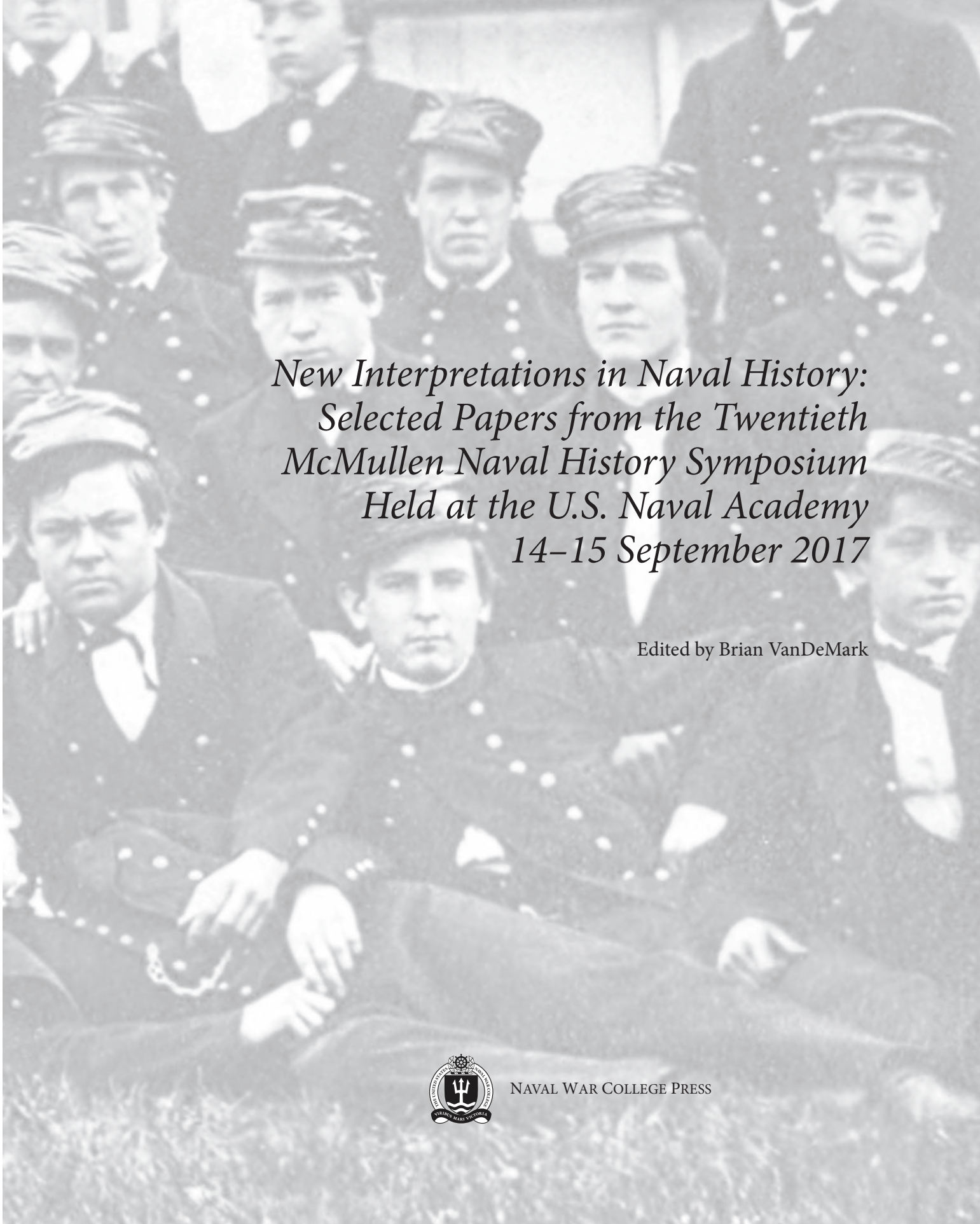
Naval War College Historical Monograph Series No. 31

The historical monographs in this series are book-length studies of the history of naval warfare, edited historical documents, conference proceedings, and bibliographies that are based wholly or in part on source materials in the Historical Collection of the U.S. Naval War College.

The editors of the Naval War College Press express their gratitude to the U.S. Naval Academy Foundation, whose generous financial support made possible the publication of this historical monograph.

Correspondence concerning the Historical Monograph Series can be sent to the Director, Naval War College Press. For copy requests write to President, U.S. Naval War College, Code 32, or contact the Naval War College Press.

U.S. Naval War College
686 Cushing Road
Newport, Rhode Island 02841
http://usnwc.edu



New Interpretations in Naval History: Selected Papers from the Twentieth McMullen Naval History Symposium Held at the U.S. Naval Academy 14–15 September 2017

Edited by Brian VanDeMark

Naval War College Press

Naval War College Press
Newport 02841
Published 2023
Printed in the United States of America

ISBN 978-1-935352-82-2 (paperback)

The logo of the U.S. Naval War College authenticates Historical Monograph Series No. 31, *New Interpretations in Naval History: Selected Papers from the Twentieth McMullen Naval History Symposium Held at the U.S. Naval Academy 14–15 September 2017,* edited by Brian VanDeMark, ISBN 978-1-935352-82-2, as the official U.S. Naval War College edition of this publication. Use of the U.S. Naval War College logo and ISBN 978-1-935352-82-2 is strictly prohibited without the express written permission of the Editor (or Editor's designee), Naval War College Press.

Naval War College Press
Code 32
686 Cushing Road
Newport, Rhode Island 02841

401.856.5772 telephone
401.841.1071 fax
press@usnwc.edu

https://usnwc.edu/nwcpress

TABLE OF CONTENTS

III *The Maritime Origins of the Italian Crisis of 1917*

FABIO DE NINNO

We must consider the presence of bread in this country as [being] as necessary as that of ammunition for war."[1] These words were part of a letter written in November 1916 by Antonio Salandra, Italy's former prime minister, to his successor, Paolo Boselli. At that time, Italy had been at war for a year and a half. Its declaration of war, on 24 May 1915, had been followed by a harsh land campaign along the mountainous border with its historical enemy Austria-Hungary. However, the preoccupation expressed by Salandra was with something that came not from the mountains but from the sea. Growing shortages of food were reported across the country. Grain imports were falling, because German and Austro-Hungarian U-boats were dealing extensive damage in Mediterranean shipping lanes and inflicting severe losses on transports bound for Italy. The danger of a supply crisis was looming on the horizon. In 1917, finally, the crisis materialized, peaking during the months before Italy's greatest defeat in the war, at Caporetto (24 October–15 November 1917).

Salandra's words remind us of the centrality that naval warfare as a form of economic warfare assumed during the First World War, in the forms of the blockade imposed on the Central Powers by the Entente and the counterblockade strategy adopted by Germany, utilizing submarines and surface raiders to attack the enemy seaborne communications. Histories of the Great War at sea have long acknowledged the centrality of this maritime confrontation for the naval strategy, operations, and tactics of the conflict.[2] Studies have also analyzed how naval warfare affected the plans for economic warfare, blockade, and the internal fronts of belligerent powers. These developments have been accompanied by an intense debate on the nature of the British blockade.[3]

Anglo-German confrontation is at the center of all this analysis—not surprisingly, because both countries were at the core of the naval war and each aimed to starve the other in the attempt to win the conflict.[4] In doing so, however, each of the two powers exercised a substantial degree of influence on the allies of the other: Austria-Hungary for Germany and Italy and France for Britain. The history of the effects of naval warfare on all these countries is somewhat neglected, and only in

recent years, mainly in France, has more attention been dedicated to the role of naval warfare in the national narrative of the Great War, seeing it as a "history to rediscover."[5] The Great War at sea, however, has not figured largely in Italian historiography. Some influence of the crisis of supplies on the internal front in 1917 has been acknowledged, but these effects are often overshadowed by the greater focus on the internal front and the army.[6] Some recent publications have argued that Italian effectiveness in protecting national maritime traffic was comparable to or even better than that of the rest of the Entente. However, these statements concentrate only on the convoy system, without considering the broader picture of the Italian shipping and distribution system or the geographical distribution of losses.[7]

The Italian victory in the war depended on the capacity of the Regio Esercito (Italian Royal Army) to defeat its Austro-Hungarian counterpart. However, the army relied for its supplies of food and weapons on an economy very vulnerable from a maritime perspective. Italy lacked raw materials, a major strategic weakness, while its merchant fleet was inadequate to acquire resources abroad and was in any case poorly mobilized, making the country dependent on foreign shipping. The conduct of naval warfare by the Regia Marina exercised substantial negative influence on the Italian capacity to acquire supplies. National weaknesses worsened the impact of increasingly global submarine warfare. The first phase of unrestricted submarine attacks (4 February 1915–5 June 1915) hit mainly trade around the British Isles; Italy was neutral. The later concentration, from October 1915 to the end of 1916, of submarine attacks in the Mediterranean, where the U-boats could operate more freely than in the Atlantic, inflicted heavy losses on Italian transports. The third phase (properly the second campaign) of unrestricted warfare (from 1 February 1917 onward) hit both the Atlantic and Mediterranean, with a prevalence in the former but heavy losses also in the latter.[8] Italy took prolonged damage, because it was engulfed in the second and third phases for their entire durations.

Together these problems created the maritime origins of the Italian crisis of 1917, which risked pushing Italy out of the war. The crisis demonstrated the effectiveness of a U-boat campaign against a country with such vulnerability to this form of economic warfare, comparable to that of a nation-island like Britain. Analyzing the maritime origins of the Italian crisis can contribute to a reassessment of both the national and global narratives of the conflict, possibly allowing a better understanding of how profound the impact of submarine warfare during the First World War was.

During the Great War, the first major Italian maritime weakness was structural: dependence on seaborne trade. From 1900 to 1913 the Italian economy experienced strong economic growth. Gross domestic product grew by 44 percent, and the country entered its first phase of massive industrialization.[9] Nevertheless, Italy remained a poor country, with the largest part of its active population (59 percent in 1911)

employed in a backward agricultural sector. In vast areas of the South production was unable to go beyond subsistence farming, and imports had to compensate for insufficient agricultural output.[10] The peninsula also lacked almost every strategic raw material necessary for a modern industrial economy: coal, iron, and oil all had to be imported.[11] During prewar years imports soared to support industrial production, increasing the dependence on seaborne trade, as shown in table 1.

Table 1
Importation and Production of Strategic Raw Materials in Tons (1913)

	Total Importation	National Production	Largest Exporters to Italy
Coal	10,834,008	701,081	United Kingdom (9,397,132)
Scrap iron	326,230	603,116	France (78,340), Germany (71,340)
Raw iron	221,608		United Kingdom (112,550), Germany (71,370)
Wheat	1,810,733	4,615,300	Russia (881,546), Romania (319,447), Argentina (297,321)
Oil	150,030	6,752	United States (98,350), Romania (34,780)

Source: *ASI,* II, IV (1914), pp. 157, 227–33.

Italy's merchant fleet was insufficiently large to deliver these goods. A strong protectionist policy had been set up during the prewar period to support merchantship production for the national navigation companies and thereby achieve independence from foreign merchant fleets. Nevertheless, shipyards preferred the more profitable warships sector.[12] Also, navigation and shipping were heavily subsidized, so as to maintain even unprofitable routes. As a consequence, the merchant fleet grew only from 820,000 tons in 1890 to 1,282,115 tons in 1914, despite a tenfold increase in port movements, and retained a high percentage of sailing ships compared with other merchant navies (27 percent in 1914).[13] With a merchant fleet unable to fulfill their needs, Italian importers turned to foreign freighters, as shown in table 2.

Table 2
Seaborne Transportation in Tons to Italy by Nationality (1912)

Total	**23,554,289**	**100%**
Italian	8,928,532	37.9%
British	6,653,678	28.2%
Greek	2,619,020	11.1%
Austro-Hungarian	1,466,921	6.2%
German	1,225,294	5.2%
Norwegian	650,761	2.8%
Spanish	573,606	2.4%
Danish	337,923	1.4%
Dutch	334,459	1.4%
French	147,461	0.6%

Source: *"Movimento di tutti i porti del regno con riguardo alla nazionalità dei bastimenti, Tonnellate di merce sbarcata," ASI,* II, III (1913), p. 215.

The early effects of this vulnerability were already emerging during the period of Italian neutrality (3 August 1914–24 May 1915). Supporters of neutrality argued that Italy could bargain with both sides and raise imports from elsewhere (mainly the United States). Instead, the blockade measures introduced by the Entente produced the opposite effect. Indeed, during the fall of 1914 trade measures hit the economy hard, because Britain and France restricted Italian trade to avoid reexportation to Germany.[14] The Entente's wartime needs for transports reduced

availability for the Italian trade, rapidly increasing transportation costs: between November 1914 and February 1915, average freight costs per hundred kilograms rose from three to eleven shillings and almost tripled for coal. Food prices in the main cities rose between 4 and 11 percent in comparison with the previous year, mainly owing to increased transportation costs.[15] The effects on the Italian economy were staggering: in the second half of 1914, imports fell by 45 percent and exports by 49 percent. Faced by the risk of economic collapse, Italian industrialists pressed the government to join the war on the side of the Entente.[16] It was a first taste of the impact of seaborne blockade on the Italian economy.

The war introduced new variables. The closure of the Dardanelles and the impossibility of reaching the traditional import markets of Romania and Russia by land caused a significant shift in the importation of foodstuffs. In 1913, those countries supplied 41 percent of Italian food imports; in 1916 the United States and Argentina jumped to, respectively, 54.6 percent and 19 percent; later, in 1917, Australia and British India rose to 25.8 percent and 14.7 percent of the total. Coal remained predominantly of British provenance: 87.4 percent in 1916 and 78.1 percent in 1917.[17] To fight its war, Italy found itself dependent on these sources as never before, making it more exposed to German submarine warfare, which from 1915 harassed the world's sea-lanes.

Geography, natural resources, and the small size of the merchant fleet were certainly problems. However, Italian weaknesses were multiplied by unpreparedness for economic warfare at sea. The capacity of submarines to inflict damage on trade was a surprise for all the great powers. Prewar Britain, where strategic culture was deeply rooted in institutions, was already preparing the country for commerce defense and attack.[18] In contrast, the Italian Navy and even more so the government were thoroughly surprised by the capabilities of submarines, as postwar major naval thinkers admitted.[19] Before the war the Italian Navy lacked even an in-depth view of commerce defense as part of its strategic thinking and naval planning. Possibly this shortcoming reflected its recent fighting experience, very limited and marked by the battle-fleet clash of Lissa (1866). Until the Great War, battle-fleet and decisive engagements dominated Italian naval strategic thought. Despite some influence from the Jeune École in the 1870s, blockades and economic warfare attracted little attention among Italian naval thinkers.[20] The merchant fleet was under the authority of the Navy Ministry, but prewar Italian plans and naval conventions with the Austrian allies paid no attention to trade defense, concentrating instead on the possibility of decisive engagements against the Austrian or French fleets. Potential attacks against British shipping, outside the northern entrance of the Suez Canal, were forecast only in the 1913 naval convention between Rome and Vienna.[21] Indeed in August 1914, at the outbreak of war in Europe, the Chief of Naval Staff, Vice Adm. Paolo Thaon di Revel, expressed the opinion that Italy should stay neutral in

view of the British intervention. However, he linked that choice to fear of a possible joint action by Anglo-French fleets to destroy the Italian Navy more than to the risk of a blockade.[22] The failure to plan economic warfare had a substantial impact on all aspects of naval warfare, regarding both mobilization of the merchant fleet and the conduct of naval operations.

Regarding the first aspect, a major obstacle was that Italy's production of new merchant ships remained limited. During the war the Italian shipbuilding industry began significant expansion, fueled by public subsidies and expectations of increased profits from wartime production, rising freight costs, and the necessity to replace losses. However, the absence of centralized control by the ministry, priority given to military construction, lack of raw materials, poor management, and low technological skills prevented Italy from producing enough new ships.[23] The government hoped that shipping companies would enlarge their transportation capacity by acquiring ships abroad. Indeed, in August 1916 a decree established total tax exemptions for profits obtained through new steamships, whether constructed in Italy or elsewhere, acquired within the next two years.[24] However, navigation companies' profits were rapidly shrinking owing to losses and low profitability, and little money remained to buy new assets.[25]

In December 1916, larger companies such as Ansaldo drafted plans to purchase a number of ships in the United States.[26] However, their attempts were stopped by the growing difficulty of insuring them. In March 1917, Ansaldo bought two merchantmen (*Eagerness,* of 5,050 tons, and *Lovli,* 11,000 tons), but the Istituto Nazionale Assicurazioni (National Institute for Insurances), charged by the government with repaying wartime losses, offered to guarantee only half their value.[27] Only in August 1918 did a law force the institute to insure ships for their full worth—with the side effect of limiting the maximum coverage allowed.[28] As a result, between 1915 and 1917, Italy built only 115,058 tons of new merchantmen and bought 66,929 tons abroad. Much more significant was the acquisition, in 1915, of 251,188 tons of former enemy vessels blocked within Italian ports.[29]

Enlisting crews for merchantmen was another huge problem. Until 1917, navigation was exempted from military law and crews were answerable only to their companies. Nevertheless, during the fall of 1916 and early 1917 shipowners "had difficulties in recruiting the personnel necessary to substitute [for] those who do not want to remain on board." Even on requisitioned vessels, under the direct control of the government, crews often "tended to disembark evading the [relative] prohibition, committing a serious act of indiscipline."[30] Only in March 1917, in the middle of the severest U-boat offensive, did a decree put the merchant navy crews under military law.[31]

The functioning of the Italian merchant navy was awkward in other ways as well. During the prewar period, shipowners who believed that proposed compensations

were too small hampered legislative projects for wartime mobilization. On 21 January 1915 a decree authorized the requisitioning of merchant vessels for war purposes and charged a "Commission for Requisitions" in the Navy Ministry with this duty. By June the commission had agreed to pay two-thirds of market price for requisitions, on the basis of the rates fixed by the British Admiralty Transportation Arbitration Board.[32] The navigation companies put up stiff resistance. As a result, by October 1915 only 109 steamships out of the 949 registered had been requisitioned (sixty-five by the navy alone, to haul coal). The rest of the merchant fleet continued to operate under a free market, creating a mixed system of requisitioned and free navigation based on time-chartered freights.[33]

The lack of a single government agency for shipping produced serious inefficiency. Ships often changed the type of cargo transported (coal instead of wheat, etc.), and often sailed with their holds not fully loaded. Loading and unloading in ports was disorganized and not entirely under the control of state authorities, with consequent delays.[34] Italian freight rates were higher than those of other countries, reaching by 1916 "phantasmagorical heights." In January, to keep prices down, a new fees system was introduced based on the ratio between the tonnage of goods transported and miles traveled. Although more efficient and cheaper, the system was not extended to all merchant vessels but instead was employed only for critical services.[35]

The government tried to improve mobilization by establishing the Commissione centrale per il traffico marittimo (Central Commission for Maritime Traffic), on 7 February 1916, initially under the Navy Ministry but from July 1916 under the new Ministry for Maritime and Railroad Transportation. Officially the commission had jurisdiction over the entire Italian merchant fleet. In reality, the administrative process remained divided between the former Commission for Requisitions and the new board, which fixed contracts and tariffs for requisitions, while the Office of the Chief of Naval Staff retained the authority to call for the requisition of vessels.[36]

Difficulties grew after the spring of 1916. Parliament put the Boselli government under heavy pressure, because it had been unable to control the prices of shipping (or their effects on the living costs of the population) and because navigation companies argued that the free market was more efficient in keeping freight costs down. Such was the influence of the shipping companies that in late November 1916 they were still lobbying the government not to arm merchant ships against submarine attacks.[37] As a result, in January 1917 the "goods transported / mile traveled" system was abolished, going back to a partially free market while the number of ships requisitioned jumped to 340 in November 1916 and 345 in June 1917, contributing to a further rise in costs.[38] It is then not surprising that soon after the war one of Italy's leading economists, Epicarmo Corbino, found that these policies, the direct consequences of prewar protectionism and thus of the high political power of the

navigation lobby, had been ineffective for acquiring new ships or lowering freight costs.[39]

The lack of a sufficiently large merchant marine forced Italy to rely on international shipping, mainly British. This dependence had significant consequences. First, the country was subject to rises in international freight rates. This point is especially relevant for coal, the raw material for which Italy was most dependent on imports. To limit transportation costs for its allies, Britain introduced a Coal Freight Limitation Scheme in May 1916. Initially intended for France, it was extended to Italy in October.[40] Still, during the fall of 1917 only part of the coal sold to Italy was carried on discounted rates (50½ shillings per ton), mainly the stocks allocated for the Italian state and armed forces. The rest (and the largest part) of the Italian imports was paid for at market prices, at that time around 185 shillings.[41] Indeed, not even Britain could stop the rise in international prices of shipping caused by the war, and during the critical year of 1917 coal and phosphates freight to Italy experienced a twentyfold increase compared to 1914, as shown in table 3.

Table 3

Coal from Cardiff to Italy in Shillings per Ton	1914	1915	1916	1917
Genoa	8/8½	33/½	79/5	170
Naples	8/11¾	32/2	75/3	79/2
Palermo	8/9¾	30/5½	77/3	n.a.
Phosphates from Tunisia to Genoa in Italian Lire	6	9.5	26.6	100

Source: Fortini, "La marina italiana nel 1922," p. 42.

Further, Britain could use shipping as an instrument of political pressure on Italy. In fact the Italian declaration of war on Germany in August 1916 happened in exchange for a promised rise (which never materialized) in coal shipments from 600,000 to 850,000 tons per month.[42] Meanwhile, Italy was subordinated to British interests and decisions. During 1915 London put six hundred ships at the disposal of France and Italy, but in May 1916, pressed by national exigencies, the British Shipping Control Committee reduced the quota. Nor did the institution of an Inter-Allied Shipping Committee (January 1917), with Italian representatives, improve the situation.[43] It is not surprising that during May 1917 the Italian minister of agriculture, Giovanni Ranieri, complained to Sidney Sonnino, the minister of foreign affairs, that "practically, it is the English government that decides and organizes: it tends to prioritize its own needs; next, it is influenced mainly by France, which hosts the British Army; we are the last, we always have to insist strongly to get our needs satisfied, and we are limited to being provisioned on a day-to-day basis."[44]

The latter was an exaggeration but reflected the Entente's increasing problems in finding the necessary ships to supply Italy. On numerous occasions during 1917 the British government expressed awareness of the critical situation of Italian supplies. The difficulty was that of assembling a sufficient number of merchantmen,

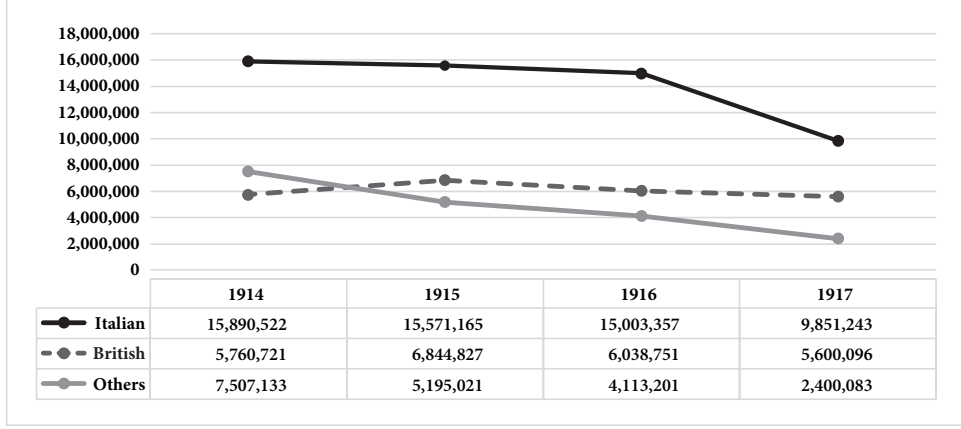
allied and neutral, to ship coal and grain to the peninsula when British and French transportation was also affected by the deficit (American ships started to make a difference for Italy only in 1918).[45] However, this shortage was now made acute more by the Italian losses than by allied unwillingness. During 1915–16 the Italian merchant fleet lost 303,322 tons of ships, and its losses continued to grow in the next year. During early 1917, allies and neutrals (mainly Greece) were able to increase the capacity at the disposal of Italy but not sufficiently to compensate for the continuing Italian losses. The deficit accumulated in 1915–16 was never replaced. (See, in general, table 4.)

Table 4
Ships at the Disposal of Italy, National and Foreign (December 1916–August 1917)

Month	December	January	February	March	April	May	June	July	August
Italian merchant fleet	1,552,416	1,531,534	1,511,144	1,439,275	1,435,249	1,396,509	1,384,983	1,339,863	1,295,863
Allied	342,133	356,853	367,473	366,573	370,553	361,229	367,829	342,909	343,009
Neutrals	301,715	318,005	342,490	447,387	466,711	440,471	404,838	363,071	347,161
Total	**2,196,264**	**2,206,392**	**2,221,107**	**2,253,235**	**2,272,313**	**2,198,209**	**2,453,031**	**2,157,650**	**1,986,033**

Source: Ministero dei trasporti marittimi e ferroviari, Direzione generale del traffico marittimo, Appendice "alla situazione n. 34 del naviglio mercantile sotto controllo italiano al 1 Settembre 1918." Riservatissimo. Tav. II, Tav. III, Tav. IV, Rdb, b. 499, f. 1, AUSMM.

All this explains why during the period 1916–17 goods delivered to Italy by British merchantmen declined much less than did those transported by Italian vessels, which in fact experienced a sharp fall in 1917, as shown in figure 1. The result was that by the end of 1916, because allies and neutrals could not compensate the Italian



Source: *ASI*, II, IV (1915), p. 231; V (1916), p. 203; VI (1917–18), p. 257.

Fig. 1
Total Movements of Goods in Italian Ports (1914–1917, in tons), Italian, British, and Others

deficit by increasing their contributions, there was a constant shortage of tonnage for Italian transport needs.

By early 1916, Italy's maritime vulnerability had placed it in a grim situation: imports had to come from farther away and at far higher cost than in the past, and there was a growing shortage of ships to carry them. In March the minister of the navy, Camillo Corsi, explained the effects of this situation to the parliament:

> The war imposed changes in the routes of maritime commerce. We are today obliged to search [for] products, earlier available in European states, beyond the oceans: the grain, which arrived in a significant part from the Black Sea . . . today we have to buy in America at a more than quadruple distance. . . . Foreign technical reviews recently announced that the Gulf was [i.e., the ports in the Gulf of Mexico were] available to freight at [a price of] 320 shillings for Genoa if there will be a relevant tonnage. However, because there is no available capacity to satisfy the request, it was announced [that there would be] a likely rise of [prices for] this freight due to the [foreign] competition.[46]

Increasing prices and scarcities of consumer goods resulted by 1916. Between 1916 and the first half of 1917, however, direct losses of merchant ships to German (and Austrian) U-boats made these difficulties a national emergency.

The general conduct of naval operations in the Mediterranean is well known, mainly thanks to the transnational work of Paul Halpern.[47] However, there are still questions to be analyzed. First, the Italian naval war effort was split between the Adriatic and the Mediterranean. The Italian Navy, in accordance with the war aim of gaining supremacy in the Adriatic, always asserted the primacy of operations there.[48] For example, in October 1917, when the crisis of Italian supplies had reached its peak, Revel rejected a British request to provide more escorts to divert some shipping from the Atlantic to the Mediterranean so as to improve Italian deliveries.[49] Between January and April 1918 Revel repeatedly opposed requests by his prime minister, Vittorio Emanuele Orlando, to divert light naval forces from the Adriatic to the Mediterranean for escort duty. According to Revel, the Italian Navy had a "debt of honor" with the country regarding the Adriatic (to avenge Lissa), and destroyers and torpedo boats were needed to escort capital ships in case the Austro-Hungarian fleet sought a decisive engagement.[50] In the end, Revel's behavior reflects the substantial autonomy of the army and navy in the conduct of the war, sometimes bypassing even the authority of the government. It also explains the constant conflicts between Italy and its allies regarding the deployment of forces in the Mediterranean.[51] The navy's predominance in defining the political objectives of the naval war created a split between its vision of the conflict and the country's necessities. Lower priority for the Mediterranean also meant that Italy counted more on Anglo-French resources for antisubmarine warfare.

A first major consequence of the war in the Adriatic was that the entire Italian eastern coast was almost closed to civilian shipping. In 1915 and early 1916 traffic shifted entirely to the ports of the Tyrrhenian and Ligurian Seas, mainly

Genoa, Savona, Leghorn, and Naples.[52] Until the reduction of traffic in these ports as well caused by U-boat attacks, they experienced jams and problems in distributing goods, problems exacerbated by a shortage of railway cars caused by the army's needs.[53]

In 1916, according to a study by the Naval Staff, 93 percent of the ships directed to Italian ports moved along the routes from Gibraltar to the Tyrrhenian and Ligurian Seas (72 percent to the north and 20 percent in the south), only 7 percent from Suez to Italy.[54] By early that year the German U-boats, initially operating under the Austrian flag, were concentrating their efforts in the Mediterranean to avoid provocations against the United States. They were harassing British transports on the Gibraltar–Suez route and increasing their attacks on the shipping lanes that supplied the peninsula. Owing to the concentration of Italian trade, the Gibraltar–Genoa route become a "shooting gallery." Here during 1916 submarines sank approximately 239,308 tons of ships, 109,077 tons of which were Italian. August 1916 saw the Italian merchantmen suffer the most during the war, losing 57,819 tons of ships, 40,291 tons on the Gibraltar–Genoa route alone.[55] It was only a fraction (25.6 percent) of the global losses suffered at the hands of German U-boats, but it was a highly significant part of the tonnage directed to Italian ports. Widespread panic was reported in Italian western coastal cities (Genoa, Leghorn, and Civitavecchia), and in October Ansaldo, not only a shipbuilder but Italy's leading weapons manufacturer, based in Genoa, warned that losses on this route risked causing delays in production.[56] Finally, in 1916 U-boats hit the even more vulnerable Italian sailing ships hard, destroying over 57,000 tons of these ships. As a result, in October Corsi restricted sail navigation from longer routes, further diminishing tonnage available for extra-Mediterranean transport.[57]

To improve coordination of antisubmarine warfare in the Mediterranean, the Entente held a conference in Malta (March 1916), dividing the Mediterranean into eleven patrolling areas distributed among the powers. The conference also established "suggested routes," proposed passive defensive measures, and assigned the overall coordination of antisubmarine warfare to the French admiral Louis Dartige.[58] In reality, however, by summer 1916 neither the French nor the Italians had enough destroyers and torpedo boats to patrol their areas. Losses and the need to escort both the battleship forces that were blocking the Austrians in the Adriatic and troop transports to the Middle East also reduced their availability. By the summer of 1916, a substantial number of patrol ships were in procurement, even in Japan. The Italian Navy alone ordered a hundred vessels, but by the end of 1917 only sixty-five had been acquired.[59]

The antisubmarine effort also suffered from the primitive antisubmarine technology of the time, still based on decoy ships (Q-ships) and ineffective barrages of antisubmarine nets, such as in the Otranto Strait. Effective antisubmarine weapons,

such as depth charges, were still developing. Not until 1917 did hydrophones and improved aircraft bring greater efficiency to finding enemy submarines.[60] Italians lagged behind their allies in technological development: only in the second half of 1917 did the physicist Antonino Lo Surdo develop the first experimental hydrophones, and procurement proved difficult.[61] The MAS boats (*motoscafo antisommergibile,* antisubmarine motorboat) were another attempt; 299 were built, but their range was limited and navigation capabilities insufficient for open-water operations in the Tyrrhenian, Ligurian, and Mediterranean. Aircraft employment was more efficient, in particular after the institution of an inspectorate for air and submarine weapons (9 April 1916), and the naval air force underwent a major expansion. In 1918 there were 526 seaplanes and 92 other aircraft, but they were concentrated in the Adriatic. In 1917, the construction of seven new air stations for airships, necessary for antisubmarine patrolling, started along the Tyhrrenian and Ligurian coasts, but only four (at Palermo, Bagnoli, Corneto Tarquinia, and Piombino) were completed before the end of the war.[62]

Limited resources explain a December 1916 report by the Italian Naval Staff that Italian and allied antisubmarine defense was highly ineffective. The report argued that enemy errors of navigation and their own mines caused a third of U-boat losses; only 6 percent were lost to antisubmarine barrages, 14 percent to decoy ships and the same to naval gunfire, 12 percent to allied submarines, 8 percent to mines, and 6 percent to ramming. Even more important, decoy ships and antisubmarine barrages, particularly in the Otranto Strait, were declining in efficiency, so much so that their effectiveness could already "be considered null."[63]

Introduction of convoys was a possible way to improve defensive measures. At the end of 1916 the Italian Naval Staff analyzed the option but rejected it, because there were not enough escort ships.[64] In February 1917, Revel argued that convoys would represent an "experimental and hazardous" solution. He believed it was preferable to arm all merchantmen and equip them with radios.[65] Nevertheless, a major improvement came with the appointment on 27 February 1917 of an *ispettore per la difesa del traffico marittimo nazionale,* inspector for the defense of national maritime traffic. The inspector, Vice Adm. Giuseppe Mortola, had jurisdiction over all matters regarding submarine defense, both at sea and on land, and was charged with discussions with allies and neutral powers.[66] These developments in antisubmarine warfare reflected a common trend within the Entente: in December 1916 the Royal Navy set up the Anti-submarine Division, and exactly one year later the French established the Direction générale de la guerre sous-marine.[67]

Mortola was convinced that it was better to concentrate the few antisubmarine units available on protecting convoys, especially on the vital Gibraltar–Genoa route, than to disperse them in patrolling sea-lanes. On 11 March 1917, after some experimentation in the preceding month, the convoy system was made mandatory on the

Gibraltar–Genoa route, prioritizing Italian, allied, and neutral ships that were carrying goods for Italian ports.[68] By 19 May 1917, forty-five convoys with 150 ships had passed between Gibraltar and Genoa without loss.[69] Nevertheless, this success had a price in terms of commitments, which, in combination with the Adriatic requirements, explained the unwillingness of the Regia Marina to share escort ships with its allies.[70] It also massively reduced the availability of units for the defense of Italian coastal waters assigned by the Malta conference.

For example, during the summer of 1917 U-boats concentrated their attacks in the Strait of Messina, harassing coastal traffic between the mainland and Sicily, impeding supply to the island and causing protests to Rome from local authorities. To defend the strait Revel was able to dispatch only four destroyers, one torpedo boat, eight cutters, and five MASs, while for the rest of Sicily, with its 1,632 kilometers of coastline, no more than two torpedo boats, six cutters, six MASs, and seven seaplanes were available. Vice Admiral Mortola insisted that these were all the forces available, because of the Adriatic and other antisubmarine commitments.[71] Italian difficulties were owing partly to the high level of attrition suffered by the fleet; many units had been lost or put out of service. Also, maintenance and new construction were made difficult by the scarcity of raw materials, further contributing to the reduction of antisubmarine effectiveness. By December 1917, the Italians' best hope to improve their submarine defenses rested on the involvement of Americans, for which Revel heavily pressed Adm. William S. Sims, commander of the U.S. Naval Forces Operating in European Waters.[72]

A major problem was the defense of coastal trade, on which Italy now relied especially heavily with its railway system at its limits owing to the shortages of coal. The Regia Marina tried to react by improving coastal defenses, and by the end of 1917 employed over seven thousand men against possible landings of spies and of smugglers that were resupplying U-boats. At the beginning of 1918 there were sixty-seven "refuge points" for merchant ships, armed with 291 guns, all along the Italian coastlines.[73] The measures were merely palliative, however, and losses in coastal waters grew continuously (see table 5).

The average tonnage—that is, the size of individual ships—sunk in coastal waters was small and diminished during the war. Here U-boats sank mainly small sailing vessels often used for internal communications, the losses of which by the end of 1915 were already causing significant damage to national commerce.[74] In early 1917, this traffic plummeted. Countermeasures adopted by the navy were ineffective, because submarines attacked merchantmen faster than the defenses could react or the ships

Table 5
Italian Losses in Coastal Waters

Year	Number	Tonnage	Average Tonnage (per ship sunk)
1915	10	19,917	1,991.7
1916	65	65,290	1,004.4
1917	181	107,011	591.22

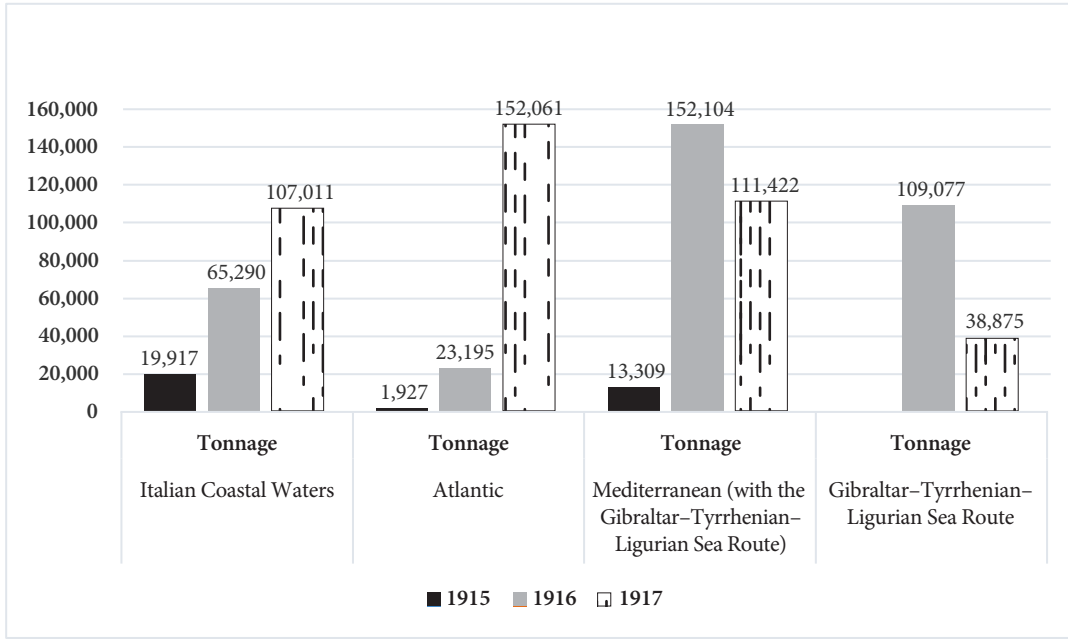
Source: Calculation based on *"Lista delle navi mercantile italiane perdute per cause di guerra."* Ufficio del capo di stato maggiore, Ispettorato per la difesa del traffico marittimo nazionale, Rdb, b. 499, AUSMM.

seek refuge. The minister of the interior, Vittorio Emanuele Orlando, ironically argued that the navy nevertheless certainly "did not lack the most serene optimism" regarding the effectiveness of coastal defenses.[75] Such was the damage inflicted on this traffic that in July 1917 Mortola and the Ministry of Transports agreed to further restrictions on sail navigation, now allowed only in case of "unavoidable supply necessities."[76] The main consequence of the reduction of coastal trade was that by the summer some major coastal population centers in the south—including Naples, at that time Italy's largest city—experienced even further difficulties in obtaining already scarce wheat. Nor could the local authorities improve transportation by rail, because coal was insufficient to increase train movements.[77]

Italian improvements were limited in their effects also because the war against submarines depended on a joint effort by the Entente. A major setback was the opposition by the British Admiralty to introducing convoys, deeming them ineffective until the spring of 1917.[78] The second round of German unrestricted submarine warfare, which began on 1 February 1917, wrought havoc, despite the entry of the United States into the war on 6 April 1917. April was the enemy's most successful month: 860,000 tons of shipping was sunk, 277,984 tons of it in the Mediterranean.[79] Losses in the Atlantic too affected transportation to Italy; for example, of the 374,494 tons lost by the Italian merchant navy in 1917, 152,061 (40.5 percent) were in the Atlantic.[80] In the Mediterranean, the allies reacted with the Corfù conference of 28 April–1 May 1917, which devised a unified command and introduced the convoy system on selected routes. However, it was not until the London conference (4–5 September 1917), and thanks to American pressure, that convoys were introduced extensively in the Mediterranean.[81] Indeed, enemy submarine presence in the Mediterranean peaked in October 1917, when thirty-two German and fourteen Austro-Hungarian submarines were operating there, as well as four German boats at Constantinople.[82] That moment corresponded with a worsening of the Italian crisis. The German and Austrian navies were aware how deeply their effort against Britain was affecting Italy as well.[83]

The trend analyzed above underlines the fact that although the Gibraltar–Genoa route, the most dangerous in 1916, was largely secured during the following year, losses grew in other areas, mainly the Atlantic and the Italian coastlines, as figure 2 shows.

The point about the Atlantic is significant as showing how interconnected were the various naval fronts (and with them, land fronts): the German submarine attacks in the Atlantic directly and heavily influenced Italian shipping. In the first half of 1917 the shipping crisis, now inflated by the losses in the Atlantic, grew month after month, reducing deliveries of the raw materials and food necessary to fuel the national war effort. As Revel pointed out to Boselli in May 1917, "The campaign conducted by submarines against the maritime traffic, if [it] has not given to the



Sources: Calculations based on "U-boat War in World War One"; and Ministero per i trasporti marittimi e ferroviari, *Elenco dei piroscafi e velieri affondati durante la guerra.* These data are in contrast with the optimistic figures given by Marcuzzi, "From the Adriatic to the Mediterranean," p. 483.

Fig. 2
Italian Loss of Merchantmen by Area (in tons)

enemies the results they expected, [has,] however, produced a sharp reduction in the already scarce tonnage available for the kingdom['s] importations of coal, wheat and raw materials needed for national life and wartime necessities."[84]

In June 1917, Boselli was forced to replace the war and navy ministers. Rear Adm. Arturo Triangi took the latter ministry. During a closed-door meeting of the Chamber of Deputies the new minister admitted he did not foresee a solution for the transport crisis. He also envisaged that the entry of the United States into the war would absorb ships, reducing further their availability for Italy. The news of his statement in the press had a bad effect on public opinion at a moment when the situation was worsening day by day. Triangi was forced to resign on 15 July, just one month after his appointment, and was replaced by Vice Adm. Alberto Del Bono.[85]

The incident was an important indication that Italian imports were now reaching the breaking point. The Mediterranean shipping lanes had been under heavy attack by U-boats since 1916, exposing Italian vulnerabilities in geographical, structural, and naval terms and resulting in prolonged losses of transports and of imports. The crisis, already present at the end of 1916, was intensified by the further punishment inflicted by submarines during 1917, with their severe effects on the country's economy. A full survey is not possible here, but we can focus on two key resources, coal and food, and some consequences of their scarcity. According to various sources, 800,000 tons of coal per month had to be imported: 740,000 were

necessary for the Italian economy to function, 60,000 to sustain the Italian fleet's activity.[86] However, imports never reached that volume during the final quarter of 1916 and the first half of 1917 (see table 6).

Table 6
Monthly Italian Importations of Coal (July 1916–August 1917, in tons)

	1916						1917
Month	**July**	**August**	**September**	**October**	**November**	**December**	**January**
Imports	999,673	769,403	810,316	798,864	630,960	519,960	480,055
	1917						
Month	**February**	**March**	**April**	**May**	**June**	**July**	**August**
Imports	449,911	353,116	435,953	419,130	441,381	373,173	374,962

Source: Situazione di tutte le merci importate via mare.

Nor was it possible to substitute for seaborne imports. Attempts to introduce French coal proved of little effect: only 197,056 tons arrived between March and August 1917, because of the poor state of land communications along the Alpine frontier.[87] Coal reserves, nearly two million tons in November 1916, dropped to 900,000 tons in March 1917, and shortages did not allow restoring the reserves during the following months.[88]

Coal-supply problems affected even the Regia Marina, which had to share its stockpile with the civilian administration and the army. In May 1917, Revel protested to Boselli about the constant requests for coal by the government. In August, the navy's stockpile fell to 450,000 tons. That month another 75,000 were allocated to other administrations from the navy reserves, while the fleet consumed 56,400 tons and acquired just 16,768 tons.[89] Dwindling reserves and subsequent preoccupation with a reduction of the fleet activity remained constant well into the first part of 1918.[90]

The scarcity of coal had a significant impact on the railway system, despite increased consumption of domestic lignite (low-grade, soft coal). Train activity diminished and travel time increased, with resulting delays in the distribution of goods and food.[91] Shortages of coal also affected urban transportation and public illumination; by the end of 1917, according to Orlando, public services were operating at full efficiency in only eight cities, while over 130 were experiencing severe restrictions.[92] Thanks to submarines, 1917 looked cold and dark for Italian cities.

Coal shortages delayed production of armaments and the extraction of strategic raw materials, including sulfur, vital for the manufacture of explosives. Alfredo Dallolio, Italy's minister for armaments production, faced in a large part of 1917 constant materials-supply problems: for example, in March 1917 the steel stockpile was

down to 60,000 tons, less than two weeks of consumption.[93] Less production meant fewer working days and lower salaries for workers, making them less able to afford the rising cost of food and worsening general living conditions.[94] Indeed, food restrictions were common to all European countries during the war, because agrarian societies cannot mobilize a huge number of men for their armed forces without diminishing agricultural output.[95] In Italy, army mobilization (4.2 million men, 2.5 million of them farmers) increased food consumption, because rations were larger than was usual in civilian life. The requisition of animals and diminished imports of fertilizers played their parts.[96] A poor harvest in the summer of 1915 led to rising food prices (up 53 percent between July 1914 and April 1916) and the necessity to increase imports. For example, in March 1916 imports of 325,000 tons per month were required to sustain the internal consumption of wheat.[97] After July, that requirement was never met, as shown in table 7.

Table 7
Importations by Sea of Grain (July 1916–February 1917, in tons)

	N. America	S. America	India	Australia	Total
July 1916	261,920	88,490			350,410
August 1916	177,678	59,541			237,219
September 1916	145,650	42,411			188,061
October 1916	122,753	29,215			151,968
November 1916	82,682	53,156			135,838
December 1916	126,591	40,490	4,156	16,750	187,987
January 1917	90,826	41,366	25,934	23,334	181,460
February 1917	98,888	29,416	22,317	9,938	160,559

Source: Situazione di tutte le merci importate via mare, pp. 3–4.

In November 1917, Silvio Crespi, general commissioner for national provisioning, estimated in his diary that Italy now needed 400,000 tons of imported grain per month, while median arrivals in the previous months were down to 70,000 tons. "The Provinces live on a day to day basis [provided] by the incoming ship," Crespi noted. "When a ship is torpedoed, many others had to change their route. . . . [A]lmost every day there is a torpedoing."[98]

The decline of imports led to increasing restrictions on food access for the population. On 2 August 1916 rationing was introduced for civilians, and in November the Entente powers agreed to centralize the acquisition of grain in a new "Wheat Executive" to respond to the growing difficulties.[99] Meanwhile, importations of foodstuffs continued to remain below what was necessary during the fall of 1916 and first months of 1917. Meat, already scarce on the tables of Italians, almost disappeared, and average prices for meat and cereals were driven up by freight costs and losses: in 1917 they were 266 percent higher than those of 1913.[100]

The unrestricted submarine warfare and the poor harvest of 1917 pushed the situation to the brink. The winter was unusually cold and harsh, with so little coal for

domestic heating, and during the first months of 1917 protests against the war and the famine erupted almost everywhere.[101] Shortages and inflation worsened living conditions, causing rising social tension and strikes, in particular in the "industrial triangle" of Lombardy, Piedmont, and Liguria.[102] Protests against the war intensified earlier in areas more vulnerable to maritime pressure, like Sicily. Between April and June losses of merchant ships led to an almost-total collapse of Italian imports: southern Italy simply ceased to receive wheat and could not replace imports with local production.[103] In August, Turin, Italy's second-largest industrial city, exhausted its supply of grain, and the prefect asked for urgent shipments from the procurement branch for supplies. The answer was that it was impossible; the ports simply were not receiving any more food:

> It is argued that the commissariat was supposed to carry [a] regular supply of grain from the disembarkation centres and to establish a depot in Turin. If only we can! No we can't, because the disembarkation centres, in other words, the harbour's warehouses, were and are empty—due to the missed or delayed arrivals . . . , importations are rapidly dwindling—stop[ping]—actually I've to inform S.V. [*Signoria Vostra,* Your Excellency] that from now and until September we can forecast only a few arrivals from abroad, hoping for an intensification only by October.[104]

Here we can see the deep interconnection between submarine warfare, food shortages, and social tensions. Indeed, on 21 August, less than two weeks later, a revolt erupted in the city lasting until 28 August, when the army restored order at the cost of over fifty lives. The revolt marked the start of a rapid rise in strikes and protests all over the country, interrupting military production. These events reflected the growing war-weariness and pacifism in the population and caused fear in the ruling classes that a revolution could break out as in Russia.[105]

The food crisis between 1916 and 1917 was so harsh that restrictions also hit the army. Daily rations for frontline units, already inferior to those of European counterparts, dropped from 863 grams in December 1916 to 703 by November 1917.[106] In part, the reduction was caused by the need to increase availability for the civilian population. It was at the beginning of 1917 that frontline units experienced shortages. According to the army's Bureau for Provisioning, the transport crisis hit the Regio Esercito's acquisition of wheat. By summer there was flour enough for only ten days, and the bureau distributed it to armies on a day-to-day basis until October, again too late to avoid the crisis.[107] Soldiers on leave participated in the civilian protests regarding the scarcity of food, potentially spreading the poor morale of the population into the army.[108] Food shortages played a significant role, in combination with war-weariness and harsh discipline, in depressing army morale before the disastrous battle of Caporetto. Ultimately that defeat had military causes, but the poor state of army morale, indirectly caused by the U-boat sinkings, transformed it into a rout, which allowed the Central Powers to get as far as the Piave River and capture 280,000 prisoners and 3,150 artillery pieces. The defeat destroyed the government: on 30 October, Boselli was replaced by Orlando.[109]

The Italian conduct of the war caused many of these problems, but famine and shortages were pivotal in leading to crisis: U-boats pushed the Italian internal front to within one step of collapse. It was no coincidence that just as Caporetto was beginning the Italian government pressed its allies to increase food transports by sea to keep widespread unrest from worsening into revolution: "In view of the shortage of this year's grain crops in Italy, the Italian Government decided in order to avoid risking a revolution owing to lack of food, to divert some 75 steamers of a total tonnage of 374,000 tons to the grain trade. They calculate that these vessels will convey an additional quantity of grain to Italy amounting to 120,000 tons per month."[110]

Indeed, the crisis of food and coal supplies caused by submarine warfare nearly strangled Italy. Soon after Caporetto the allied powers, fearing that Italy might exit the war and thereby significantly threaten their own military situations, agreed to reinforce transports to Italy and create the Allied Maritime Transport Council to coordinate shipping.[111] Ultimately allied efforts, in combination with the declining efficiency of enemy submarines late in the war (itself owing to convoys and improved antisubmarine warfare), allowed the restoration of Italian supplies, preparing the victory of 1918—but that is another piece of history.[112]

The Italian transport crisis of 1917 shows how nearly decisive the influence of the maritime front was for the Italian war, illustrating to how great a degree the First World War was a maritime war and how maritime realities shaped it, as Norman Friedman recently noted.[113] If we look at the major maritime power of the time, Great Britain, despite heavy losses suffered by its shipping it could double its grain reserves even at the peak of submarine warfare in 1917 thanks to efficient management of transport and supplies.[114] The internal situation of Italy in the same year seems to have been more similar to those of Germany and Austria-Hungary than to that of Britain. Both Central Powers had been suffering from the British blockade since 1914, and lack of food and raw materials was "shattering" their societies, increasing nutrition and health problems that fueled the internal moral collapse, and playing a significant role in preparing their defeat in 1918.[115] In Italy, similar effects were caused by unrestricted submarine warfare, which interreacted with structural weaknesses. Lack of raw materials and geography were inherent problems, but poor mobilization of the merchant fleet and the primacy of the Adriatic in Italian naval strategy sharply worsened the situation. The crisis of supply in Italy late in the war was well on the way to causing the same effects that it had in Germany. In the short term, the army saved the situation by holding at the Piave River, to which it had fallen back after Caporetto. Nevertheless, in the previous two years and in the one to follow the country's capacity to participate in the conflict depended on the sea and on naval warfare, notwithstanding that it was a continental country fighting a war in the Alps.

Analysis of the maritime origins of the Italian crisis of 1917 helps shape the perspective of the national narrative of the Great War. In small part it redefines the

overall view of the conflict. It is worth noting that similar internal crises affected other Mediterranean countries as well, such as Greece and Spain, in the same period. In Italy's case, the Entente blockade and German submarine warfare had major economic and political effects.[116]

Lawrence Sondhaus has pointed out that victory and defeat in the Great War came first from the sea and then from the land.[117] This was also true for Italy. Understanding the impact of submarine warfare as an economic form of war is a key to understanding the Italian history of the Great War. It profoundly influenced the internal front and as a consequence the conduct of the war on land. It also had a significant impact on the political life of the country, both during the conflict and later. Italy's naval and maritime problems also affected the general war effort of its allies.[118] Finally, there is one last relevant point to make—that the crisis had a significant impact on Italy's vision of sea power and its strategic culture. Indeed, after the war the economic shock caused by German submarines in 1916–17 was an important factor in Fascist ambitions for a navy capable of dominating the Mediterranean sea-lanes and a merchant fleet capable of transporting Italian trade autonomously.[119] Analysis of the naval and maritime origins and effects of the Italian crisis of 1917 can contribute to reassessment of the current view of the 1914–18 naval war, underlining how strongly naval warfare influenced continental powers other than Germany and contributing to new and perhaps more global interpretations of the naval history of that conflict.

NOTES

1 Antonio Salandra, *Il diario di Salandra* (Milan: Mondadori, 1966), 14 November 1916, pp. 115–16.

2 Paul Halpern, *A Naval History of World War I* (Annapolis, MD: Naval Institute Press, 1989), and during the centennial, Lawrence Sondhaus, *The Great War at Sea: A Naval History of the First World War* (Cambridge, U.K.: Cambridge Univ. Press, 2014); Norman Friedman, *Fighting the Great War at Sea: Strategy, Tactics and Technology* (Barnsley, U.K.: Seaforth, 2014).

3 Eric W. Osborne, *Britain's Economic Blockade of Germany, 1914–1919* (London: Frank Cass, 2004); Nicholas A. Lambert, *Planning Armageddon: British Economic Warfare and the First World War* (Cambridge, MA: Harvard Univ. Press, 2012), and in response to the latter, Matthew S. Seligmann, *The Royal Navy and the German Threat, 1901–1914: Admiralty Plans to Protect British Trade in a War against Germany* (Oxford, U.K.: Oxford Univ. Press, 2012), and Stephen Cobb, *Preparing for Blockade, 1885–1914: Naval Contingency for Economic Warfare* (Farnham, U.K.: Ashgate, 2013).

4 Paul Vincent, *The Politics of Hunger: The Allied Blockade of Germany, 1915–1919* (Athens: Ohio Univ. Press, 1985); Avner Offer, "The Blockade of Germany and the Strategy of Starvation, 1914–1918," in *Great War, Total War: Combat and Mobilization on the Western Front, 1914–1918,* ed. Roger Chickering and Stig Förster (Cambridge, U.K.: Cambridge Univ. Press, 2000), pp. 169–88.

5 Jean de Préneuf, Thomas Vaisset, and Philippe Vial, "La Marine nationale et la Première Guerre mondiale: Une histoire à redécouvrir," *Revue d'histoire maritime,* no. 20 (2015), pp. 15–21.

6 The lack of attention to the maritime dimension of the conflict spreads over the generations of Italian historians of the First World War, from the doyen, Piero Pieri, *L'Italia nella Prima Guerra mondiale* (Turin: Einaudi, 1965); to the most important book of the recent years, which dedicated only a few pages to the sea, almost all to the Adriatic, and did not discuss the effects of submarine warfare on Italy—Mario Isnenghi and Giorgio Rochat, *La Grande Guerra, 1914–1918* (Bologna: Il Mulino, 2008), pp. 219–24, 372–74; and up to a recent synopsis for the international public, Nicola Labanca, "The Italian Front," in *The Cambridge History of the First World War,* vol. 1, *The Global War,* ed. Jay Winter (Cambridge, U.K.: Cambridge Univ. Press, 2014), pp. 266–96, where there is no mention of the maritime dimension of the war.

7 Stefano Marcuzzi, "From the Adriatic to the Mediterranean: Italy in the Allied Naval Strategy (1915–1918)," *War in History* 27, no. 3 (2018), pp. 456–85, https://doi.org/10.1177/0968344518778307.

8 Halpern, *Naval History of World War I,* pp. 291–99, 335–34, 385–401.

9 Paolo Ercolani, "Documentazione statistica di base," in *Lo sviluppo economico in Italia,* ed. Giorgio Fua (Milan: Franco Angeli, 1978), vol. 3, pp. 417–18. For an overview of the Italian economy during the prewar period, see Stefano Fenoaltea, *L'economia italiana dall'unità alla Grande Guerra* (Rome and Bari: Laterza, 2006).

10 Patrick O'Brien and Gianni Toniolo, "The Poverty of Italy and the Backwardness of Its Agriculture before 1914," in *Land, Labour and Livestock: Historical Studies in European Agricultural Productivity,* ed. B. M. S. Campbell and M. Overton (Manchester, U.K.: Manchester Univ. Press, 1991), pp. 385–409.

11 Giovanni Federico and Antonio Tena, "Was Italy a Protectionist Country?," *European Review of Economic History* 2, no. 1 (April 1998), pp. 73–97; Vera Zamagni, *Dalla periferia al centro: La seconda rinascita economica dell'Italia* (Bologna: Il Mulino, 1990), pp. 147–76.

12 Carlo Ciccarelli and Stefano Fenoaltea, "Shipbuilding in Italy 1861–1913: The Burden of Evidence," *Historical Social Research* 34, no. 2 (128) (2009), pp. 333–73.

13 Ludovica De Courten, *La marina mercantile italiana nella politica di espansione, 1870–1914* (Rome: Bulzoni, 1989), pp. 209–74.

14 Lambert, *Planning Armageddon,* p. 343. On British protests regarding Italian trade with Germany: Sangiuliano to Imperiali, 12 October 1914, p. 561; Sonnino to Salandra, Rome, 7 February 1915, p. 653; both in *Documenti diplomatici italiani* [hereafter *DDI*], serie II, vol. V. On American difficulties in exporting to Italy: Page to the Secretary of State, Rome, 2 December 1914, file no. 841.731/157 in *Papers Relating to the Foreign Relations of the United States, 1914: Supplement—The World War,* ed. Joseph V. Fuller (Washington, DC: Office of the Historian, 1928). On French pressure on Spain regarding trade with Italy: Marjorie Milbank Farrar, *Conflict and Compromise: The Strategy, Politics and Diplomacy of the French Blockade, 1914–1918* (The Hague: Springer Netherlands, 1974), p. 58.

15 *Pezzi e noli medi dei carboni fossili sul mercato di Genova, Tonnellaggio importato, Guerra Europea*

1915–1918, b. 35, f. 17.2, n. 39, Archivio centrale dello Stato [hereafter ACS], Presidenza del consiglio dei Ministri [hereafter PCM]; "Prezzi al minuto al consumo popolare," in *Annuario statistico italiano* (Rome: Tipografia nazionale, 1916), vol. II, series V [hereafter in form *ASI,* II, V (1916)], pp. 169–70. Parliament debated the impact of freight prices on consumer goods: Atti parlamentari [hereafter AP], Camera, Legislatura XXIV, 22 February 1915, pp. 6257–59.

16 Pierluigi Ciocca, *Ricchi per sempre? Una storia economica d'Italia (1796–2005)* (Turin: Bollati Boringhieri, 2007), pp. 165–67; Valerio Castronovo, *Storia economica d'Italia: Dall'Ottocento ai giorni nostri* (Turin: Einaudi, 2008), p. 146.

17 Riccardo Bachi, *L'alimentazione e la politica annonaria in Italia* (Bari: Laterza, 1926), pp. 132–33; *Commercio speciale dei principali generi—Quantità e valore dei generi importati,* p. 238, *ASI,* II, VII (1917–18); *Commercio speciale dei principali generi—Quantità e valore dei generi importati,* p. 286, *ASI,* II, VIII (1919–21).

18 Cobb, *Preparing for Blockade,* p. 137.

19 See, for example, Italy's leading postwar naval strategist, Romeo Bernotti, who argued that not even Germany expected to employ submarine attacks against shipping: Romeo Bernotti, *Il potere marittimo nella Grande Guerra* (Leghorn: Giusti, 1920), pp. 321–62, cit. (note), p. 332. For a general overview of the "submarine surprise," I would like to mention, if the reader will permit me, Fabio De Ninno, *I sommergibili del fascismo: Politica navale, strategia e uomini tra le due guerre mondiali* (Milan: Unicopli, 2014), pp. 33–38.

20 Ezio Ferrante, *Il pensiero strategico navale in Italia* (Rome: Rivista marittima, 1988), pp. 21–33; Luigi Donolo, *Storia della dottrina navale italiana* (Rome: Ufficio Storico della Marina Militare [hereafter USMM], 1996), pp. 211–31.

21 Mariano Gabriele, *La politica navale italiana dal 1885 al 1915* (Rome: USMM, 1982), pp. 161–70, 244–57; and *Le convenzioni navali della Triplice* (Rome: USMM, 1969).

22 Thaon di Revel to Salandra, *Promemoria del capo di stato maggiore della marina in occasione della proclamazione della neutralità italiana,* 1 August 1914, Carte Salandra, b. 2, f. 16, ACS.

23 Vito Dante Flore, *L'industria dei trasporti marittimi in Italia,* vol. 2, *L'azione dello Stato tra il 1860 e il 1965* (Rome: Bollettino d'informazioni marittime, 1973), pp. 487–90; Paolo Fragiacomo, *L'industria come continuazione della politica: La cantieristica italiana 1861–2011* (Milan: Franco-Angeli, 2012), p. 72.

24 *Decreto Luogotenenziale,* n. 1040, 10 August 1916, Archivio dell'Ufficio Storico della Marina Militare [hereafter AUSMM].

25 Pino Fortini, "La marina italiana nel 1922," in *Annuario generale della marina mercantile italiana, 1923–24* (Trieste: U. Trani, 1922), p. 22.

26 Ansaldo to Boselli, 15 December 1916, *Guerra Europea 1915–1918,* b. 106, 19-4-11, n. 30, ACS, PCM.

27 Presidenza del consiglio dei ministri, Telegramma in Arrivo da Genova, 29 March 1917, *Guerra Europea 1915–1918,* b. 106, 19-4-11, n. 35, ACS, PCM.

28 *Decreto Luogotenenziale,* n. 1118, 18 August 1918, AUSMM. In 1917 protests took place in the parliament regarding difficulties in insuring ships: see *Seduta del 14 marzo 1917,* p. 12973, AP, Camera, Legislatura XXIV; *Seduta del 10 luglio 1917,* p. 14242, AP, Camera, Legislatura XXIV.

29 Sergio Moschieri, *Il protezionismo marittimo riguardo alle sovvenzioni marittime italiane* (Trieste: Editoriale Libraria, 1932), p. 62.

30 *Per lo studio della requisizione del naviglio nazionale, Provvedimenti di ordine legislativo,* p. 11, Raccolta di base [hereafter Rdb], b. 499, Caso 216, AUSMM.

31 *Decreto Luogotenenziale,* n. 474, 8 March 1917, AUSMM.

32 *Per lo studio della requisizione del naviglio nazionale,* p. 3.

33 *Relazione a S.E. il Ministro e sua determinazione, Promemoria presentato dal Capo di Stato Maggiore, 1915, parte IV, requisizione e servizio trasporti,* p. 5, Rdb, b. 351, f. 4, AUSMM.

34 Memo by the Chief of Naval Staff for the Navy Minister regarding the constitution of a Commissione centrale per il traffico marittimo, Rdb, b. 750, AUSMM.

35 *Per lo studio della requisizione del naviglio nazionale,* pp. 4–6.

36 Ibid., p. 9.

37 Camillo Corsi to Boselli, Conferenza di ammiragli delle marine alleate, per provvedere alla difesa contro i sommergibili nemici, 9 October 1916, p. 1, Carte Boselli, b. 1, f. 14, n. 66003, ACS.

38 Luigi Einaudi, *La condotta economica e gli effitti sociali della guerra* (Bari: Laterza, 1933), pp. 160–61. On the problems of high freight costs see the harsh parliamentary debates of March 1916: *Seduta del 13 marzo 1916,* p. 9326; *Seduta del 15 marzo 1916,* pp. 9942–43; *Seduta del 16 marzo 1916,* pp. 9487–88; all AP, Camera, Legislatura XXIV.

39 Epicarmo Corbino, "Il protezionismo marittimo in Italia," *Giornale degli Economisti e Rivista di Statistica,* serie terza, vol. 62 (Anno 33), no. 2 (February 1922), pp. 65–81.

40 Elizabeth Greenhalgh, *Victory through Coalition: Britain and France during the First World War* (Cambridge, U.K.: Cambridge Univ. Press, 2005), p. 115; C. Ernest Fayle, *The War and the Shipping Industry* (Oxford, U.K.: Oxford Univ. Press, 1927), p. 199.

41 Note for Orlando, December 1917, *Guerra Europea 1915–1918,* b. 147, 19-13, n. 5, ACS, PCM.

42 Douglas Forsyth, *The Crisis of Liberal Italy: Monetary and Financial Policy, 1914–1922* (Cambridge, U.K.: Cambridge Univ. Press, 2012), p. 167. Another example: During September 1917, when the food crisis in Italy was at its peak, the British ambassador in Rome, Rennell Rodd, asked for the urgent dispatch of two thousand tons of potatoes for Salonika and Egypt to *"stimulate the good*

will" of the British government regarding urgent Italian requests for coal and wheat. Rennell Rodd to Sonnino, 26 September 1917, *Guerra Europea 1915–1918,* b. 147, 19-13, n. 6, ACS, PCM [emphasis supplied].

43 J. A. Salter, *Allied Shipping Control: An Experiment in International Administration* (Oxford, U.K.: Clarendon, 1921), pp. 137, 140.

44 Ranieri to Sonnino, Rome, 31 May 1917, p. 116, *DDI,* serie V, vol. VIII.

45 Two examples: First, concerns in February 1917 regarding the impossibility of reaching 100,000 tons of neutral shipping to improve coal supplies to Italy; Secretary, Tonnage for Italy, 17 February 1917, CAB 24/6/29, The National Archives [hereafter TNA]; second, acknowledgment in October 1917 of the urgent need to increase grain shipments—if, that is, doing so did not "endanger British supplies"; War Cabinet, Tonnage for Italy, 25 October 1917, CAB 24/29/91, TNA.

46 *Discussioni, Tornata del 16 marzo 1916,* pp. 9504–505, AP, Camera, Legislatura XXIV, 1 Sessione.

47 Paul Halpern, *The Naval War in the Mediterranean, 1914–1918* (Annapolis, MD: Naval Institute Press: 1987). Here, citations are to the Italian edition, *La Grande Guerra nel Mediterraneo,* 2 vols. (Gorizia: LEG, 2009).

48 The best Italian accounts of the Adriatic operations are Ezio Ferrante, *La Grande Guerra in Adriatico nel LXX anniversario della vittoria* (Rome: Rivista marittima, 1987), and Franco Favre, *La marina nella Grande Guerra: Le operazioni navali, aeree, subacquee e terrestri in Adriatico* (Udine: Gaspari, 2008).

49 Sonnino to Boselli, 20 October 1917, *Guerra Europea 1915–1918,* b. 147, 19-13, n. 6, ACS, PCM; Revel to Orlando, *Scorta ai convogli nel Mediterraneo,* 19 December 1917, 3213 RPP, *Guerra Europea 1915–1918,* b. 147, 19-13, n. 6, ACS, PCM.

50 Revel to Orlando, 2 April 1918, Carte Orlando, b. 68, f. 1574, ACS; Revel to Orlando, *Considerazioni circa la condotta della Guerra marittima,* January 1918, Carte Orlando, b. 68, f. 1574, ACS.

51 On the autonomy of the armed forces, see Isnenghi and Rochat, *La Grande Guerra,* pp. 155, 186; and Marco Mondini, "Potere civile e potere militare," in *Dizionario storico della Prima Guerra mondiale,* ed. Nicola Labanca (Rome and Bari: Laterza, 2014), pp. 35–43. On the contrasts with French and British, see Halpern, *La Grande Guerra nel Mediterraneo,* vol. 1, pp. 489–532; vol. 2, pp. 144–48, 159–67.

52 In 1916, Genoa accounted for 30.6 percent of the total movements of goods, Savona 8 percent, Naples 7.8 percent, Leghorn 8.7 percent. To understand the shift toward the Tyrrhenian Sea consider that Leghorn saw a 73 percent increase in traffic after 1914 (1,600,390 to 2,191,343 tons), while Venice was down to zero from 2,662,935 tons in 1914. *ASI,* II, VII (1917–1918), pp. 258, 263.

53 *Ferrovie dello stato, Il porto di Genova nel 1915, Andamento dei traffici attraverso il porto, provvedimenti, risultati, previsioni,* 14 January 1916, pp. 3–7, *Guerra Europea 1915–1918,* b. 35, f. 17.2, n. 39, ACS, PCM.

54 *Condizioni del problema antisommergibile, Studio del capitano di fregata Alfredo Baistrocchi,* 28 November 1916, pp. 4–5, Rdb, b. 610, f. 6, AUSMM.

55 Calculations based on Ministero per i trasporti marittimi e ferroviari, Rome, *Elenco dei piroscafi e velieri affondati durante la guerra, Società poligrafica italiana,* 1924, Rdb, b. 498, AUSMM; Naval Staff (Trade Division), Admiralty, *British Vessels Captured or Destroyed by the Enemy (Including Statistics of Allied and Neutral Vessels Lost through Enemy Causes),* vol. 1, *From the Outbreak of War to 31st July 1917,* 1 January 1918, b. 916, AUSMM; and "U-boat War in World War One," uboat.net, accessed 8 June 2017.

56 *Nota del 22 giugno 1916,* Carte Orlando, b. 58, f. 1539, sf. 2, ACS; Ministero dei trasporti to Boselli, 4 October 1916, *Guerra Europea 1915–1918,* b. 106, f. 19-4-11, 29, ACS, PCM.

57 Ministero della marina, Ufficio del Capo di stato maggiore, *Conferenza di ammiragli delle marine alleate, per provvedere alla difesa contro i sommergibili nemici,* 66003, 18 October 1916, p. 4, Carte Boselli, b. 1, f. 14, ACS.

58 Halpern, *La Grande Guerra nel Mediterraneo,* vol. 1, pp. 429–57. Suggested routes were approved by Dartige but were not mandatory; *Norme ai capitani delle navi mercantile ed a tutti i naviganti per premunirsi contro attacchi ai sommergibili, ottobre 1916,* Rdb, b. 610, AUSMM; Ufficio del capo di stato maggiore ai capitani dei mercantili, *Consigli per la navigazione in Mediterraneo,* Rdb, b. 610, AUSMM.

59 *Missione presso l'Armata navale Francese al duca d'Aosta,* n. 294 RR., Argostoli, 5 July 1916, Rdb, b. 533, AUSMM; *Rotte consigliate,* 13 July 1916, *Guerra Europea 1915–1918,* b. 106, fasc. 19.11.4, ACS, PCM. By the end of 1917, of the sixty-five, five were fitting out, twenty-five were moving to Italy, and twenty-six were in their original ports; *Promemoria sulla difesa antisommergibile,* c. end of 1917, p. 4, Carte Orlando, b. 58, f. 1539, sf. 2, ACS. Halpern, *La Grande Guerra nel Mediterraneo,* vol. 2, pp. 104–105, puts the number of escorts in May 1917 at 429 for the British, 119 for the Italians, 302 for the French, and 8 for Japan. Many of these, however, were fishing boats with little fighting capacity.

60 John J. Abbatiello, *Anti-submarine Warfare in World War I: British Naval Aviation and the Defeat of the U-boats* (London: Frank Cass, 2006), pp. 21–36; Friedman, *Fighting the Great War at Sea,* pp. 289–314.

61 Franco Foresta Martin and Geppi Calcara, *Per una storia della geofisica italiana: La nascita dell'Istituto Nazionale di Geofisica (1936) e la figura di Antonino Lo Surdo* (Milan: Springer, 2010), pp. 89–93.

62 Camillo Manfroni, *Storia della marina italiana durante la guerra mondiale, 1914–1918* (Bologna: Zanichelli, 1925), pp. 385–87; Gino Galuppini, *La forza aerea della Regia marina* (Rome: USMM, 2010), p. 127; Michele Cosentino, *L'aviazione della*

Regia marina durante la 1ª Guerra mondiale (Rome: USMM, 2018), p. 33.

63 *La Guerra al Traffico dall'inizio delle ostilità al 31 dicembre 1916, Parte I, I sommergibili,* Ufficio del Capo di stato maggiore IV Reparto, June 1917, p. 57, Rdb, b. 490, AUSMM.

64 *Condizioni del problema antisommergibile,* p. 8.

65 *Proposta Revel,* February 1917, p. 1, Carte Boselli, b. 1, f. 14, ACS. Indeed, a strong effort was taken in that direction, and over the next year 221 radio stations were installed on ships, and 178 steamers were armed, with 230 guns of various calibers (57, 76, and 102 mm); *Promemoria sulla difesa antisommergibile,* p. 2.

66 Ministero della marina, Ufficio leggi e decreti, *Decreto Luogotenenziale,* n. 332, 27 February 1917, Rdb, b. 750, AUSMM.

67 Thomas Vaisset and Jean de Préneuf, "Le Parlement, la marine et la création de la direction générale de la guerre sous-marine," *Revue d'histoire maritime,* no. 20 (2015), pp. 97–98.

68 Ministero della marina, Ufficio del Capo di stato maggiore, Ispettorato Dif. Traffico marittimo nazionale, *Servizio convogli accertati nel percorso Genova Gibilterra,* 19 April 1917, Rdb, b. 750, AUSMM; *Relazione sull'attività e funzionamento dell'ispettorato per la difesa del traffico marittimo nazionale dal 31 dicembre 1917 al 31 dicembre 1918,* p. 5, Rdb, b. 922, f. 1, AUSMM.

69 Corsi to the Prime Minister, 19 May 1917, *Guerra Europea 1915–1918,* b. 106, 19-11-14, n. 39, ACS, PCM.

70 Halpern, *La Grande Guerra nel Mediterraneo,* vol. 2, pp. 159–61.

71 Del Bono to Orlando, 27 July 1917, Carte Orlando, b. 58, f. 1539, sf. 2, ACS; *Elenco dei mezzi antisommergibili assegnati a Messina in servizio il 22-7-1917 ed il 15-8-1917,* Carte Orlando, b. 58, f. 1539, sf. 2, ACS.

72 Revel to Orlando, *Scorta ai convogli nel Mediterraneo,* 19 December 1917. Revel was asking for twenty American destroyers and twenty-five armed yachts.

73 *Promemoria sulla difesa antisommergibile,* p. 1.

74 Associazione generale di commercio di Genova, *Ordine del Giorno,* 29 December 1915, *Guerra Europea 1915–1918,* b. 35, f. 17.2, n. 39, ACS, PCM.

75 Ministero dell'interno to Boselli, 1 March 1917, *Guerra Europea 1915–1918,* b. 106, 19-4-11, n. 32, ACS, PCM.

76 Ispettorato per la difesa del traffico marittimo nazionale, n. 2804, 26 June–1 July 1917, Rdb, b. 750, AUSMM.

77 Mayor of Naples to Boselli, 21 September 1917, *Guerra Europea 1915–1918,* b. 38, f. 17.2, n. 14, ACS, PCM.

78 Nicholas Black, *The British Naval Staff in the First World War* (Woodbridge, U.K.: Boydell, 2009), pp. 175–83.

79 Halpern, *La Grande Guerra nel Mediterraneo,* vol. 2, p. 33.

80 Calculations based on Ministero per i trasporti marittimi e ferroviari, *Elenco dei piroscafi e velieri affondati durante la guerra.* During 1917, the Italian tonnage sunk in the Atlantic averaged 2,952 tons per ship, as against 1,951 tons per ship in the Mediterranean. Thus, damage suffered in the Atlantic was proportionately greater; the largest ships of the Italian merchant navy composed its Atlantic fleet.

81 Halpern, *La Grande Guerra nel Mediterraneo,* vol. 2, pp. 143–49, 187–88.

82 Hans Sokol, *La guerra marittima dell'Austria-Ungheria, 1914–1918* (Rome: Istituto poligrafico, 1934), vol. 4, p. 43.

83 Von Trotha to Tirpitz, 24 October 1917, in *Documenti politici di A. von Tirpitz* (Rome: Ufficio storico della R. Marina, 1929), vol. 2, pp. 348–49.

84 Revel to Boselli, *Riservatissimo,* 15 May 1917, *Guerra Europea 1915–1918,* b. 23, f. 17-1, n. 1, ACS, PCM.

85 *Comitati segreti sulla condotta della guerra* (Rome: Camera dei deputati, 1969), pp. 77–78; Luciana Frassati, *Un uomo, un giornale: Alfredo Frassati* (Rome: Edizioni di storia e letteratura, 1979), vol. 2, T. 1, p. 397.

86 Sonnino to Imperiali, 24 March 1917, *DDI,* VI, VI, n. 561, pp. 420–21; War Cabinet, *Coal for Italy,* 25 April 1917, CAB 24/11/73, TNA.

87 Situazione di tutte le merci importate via mare, durante gli anni 1915, 1916, 1917, 1918, 1919, Ripartite per qualità e provenienza, Rdb, b. 499, AUSMM.

88 Ministero degli esteri to Boselli, Telegramma n. 3924, 31 March 1917, p. 2, *Guerra Europea 1915–1918,* b. 23, f. 17-1-7, ACS, PCM.

89 Revel to Boselli, 17 May 1917, n. 9131, *Guerra Europea 1915–1918,* b. 23, f. 17-1-7, n. 1, ACS, PCM; Revel to the Commander in Chief of the Fleet, 24 August 1917, *Guerra Europea 1915–1918,* b. 23, f. 17-1-7, n. 1, ACS, PCM; Del Bono to Boselli, 30 August 1917, *Guerra Europea 1915–1918,* b. 23, f. 17-1-7, n. 1, ACS, PCM.

90 Silvio Crespi, *Alla difesa dell'Italia in guerra e a Versailles (Diario 1917–1919)* (Milan: Mondadori, 1937), p. 24.

91 Ministry of Maritime and Railway Transport, *Sui trasporti marittimi e ferroviari,* February 1918, *Guerra Europea 1915–1918,* b. 146, ACS, PCM.

92 Orlando to the Ambassador at London, 16 December 1917, Carte Orlando, b. 51, ACS. However, this was only the culmination of a crescendo of cuts: in January 1917 major cities had already been obliged to cut public services for lack of coal. Three examples. Florence: Società civile per l'illuminazione a gas della città di Firenze to Boselli, 16 June 1916, *Guerra Europea 1915–1918,* b. 23, f. 17-2, n. 4, ACS, PCM. Genoa: Municipio di Genova all'On. Paolo Boselli, 4 December 1917, *Guerra Europea 1915–1918,* b. 35, f. 17.2, n. 71, ACS, PCM. Bologna: Fabio Degli Esposti, *La grande retrovia in territorio nemico: Bologna e la sua provincia nella Grande Guerra (1914–1918)* (Milan: Unicopli, 2017), p. 331.

93 Antonio Assenza, *Il generale Alfredo Dallolio: La mobilitazione industriale dal 1915 al 1939* (Rome: Ussme, 2010), pp. 379–84.

94 Federazione italiana operai metallurgici, Sezione di Torino, *Relazione morale e finanziaria 1917* (Turin, 1918), pp. 1–2, Ministero dell'interno, A5G, I Guerra mondiale, b. 52, ACS.

95 Gerd Hardach, *The First World War, 1914–1918* (Berkeley: Univ. of California Press, 1978), pp. 108–38.

96 Ornello Vitali, *Aspetti dello sviluppo economico italiano alla luce della ricostruzione della popolazione attiva* (Rome: Failli, 1970), pp. 328–31.

97 Copy of direct telegram to His Excellency Mayor Des Plances, 4 March 1916, b. 610, AUSMM.

98 Crespi, *Alla difesa dell'Italia,* p. 8, for 11 November 1917.

99 Maria Concetta Dentoni, *Annona e consenso in Italia, 1914–1919* (Milan: FrancoAngeli, 1995), pp. 31–36; Bachi, *L'alimentazione . . . in Italia,* pp. 231–32.

100 Arrigo Serpieri, *La guerra e le classi rurali italiane* (Bari: Laterza, 1930), p. 106; Maria Concetta Dentoni, "Refrigeration and the Italian Meat Crisis during the First World War," in *The Landscape of Food: The Food Relationship of Town and Country in Modern Times,* ed. Marjatta Hietala and Tanja Vahtikari (Helsinki: Finnish Literature Society, 2003), pp. 157–70.

101 Dentoni, *Annona e consenso in Italia,* pp. 133–47.

102 Giovanna Procacci, *Dalla rassegnazione alla rivolta: Mentalità e comportamenti popolari nella Grande Guerra* (Rome: Bulzoni, 1999), pp. 158–66; Luigi Tomassini, "Approvisionnement, protestations et propagande en Italie pendant la Première Guerre mondiale," *Guerres mondiales et conflits contemporains,* no. 183 (July 1996), pp. 63–82.

103 Margherita Bonomo and Giancarlo Poidomani, *"L'Italia chiamò": La Sicilia e la Grande Guerra* (Rome: Carocci, 2016), pp. 39–41; Bachi, *L'alimentazione . . . in Italia,* p. 160.

104 Il commissario generale per gli approvvigionamenti e consumi to Prefect of Turin, copia di un telegramma del 9 agosto 1917, *Guerra Europea 1915–1918,* 1914–1918, b. 33, ACS, PCM. That U-boats were the cause of this shortage is confirmed by the fact that major ports like Savona and Genoa (Genova) too were not receiving coal or grain: Savona, Prefettura di Genova, Gabinetto, Condizioni del porto di Savona, *Necessità di provvedimenti urgenti per ridagli il movimento e la vita,* 25 June 1917, *Guerra Europea 1915–1918,* b. 35, f. 17.2, n. 39, ACS, PCM; Municipio di Genova all'On. Paolo Boselli, 4 December 1917, *Guerra Europea 1915–1918,* b. 35, f. 17.2, n. 71, ACS, PCM.

105 Paride Rugafiori, "Nella Grande Guerra," in *Dalla Grande Guerra alla Liberazione (1915–1945),* ed. Nicola Tranfaglia, vol. 8 of *Storia di Torino* (Turin: Einaudi, 1998), pp. 72–82; Luigi Tomassini, *Lavoro e guerra: La mobilitazione industriale italiana 1915–1918* (Naples: Esi, 1997), p. 216. See, for example, the effects on Fiat, Valerio Castronovo, *Fiat 1899–1999: Un secolo di storia italiana* (Milan: Rizzoli, 1999), pp. 126–27; Marcuzzi, "From the Adriatic to the Mediterranean," p. 481.

106 Gaetano Zingali, *Il rifornimento di viveri dell'esercito durante la guerra,* app. in Bachi, *L'alimentazione . . . in Italia,* p. 535. The average ration was 3,000 calories for Italian soldiers, 3,400 for the French, and 4,400 for the British.

107 Intendenza generale Regio E., *Relazione guerra 1915–1918, Relazione sul funzionamento dei servizi di commissariato,* vol. 3, pp. 7–8, B-1, 151/C, 4 G, Archivio dell'Ufficio storico dello stato maggiore dell'Esercito [Historical Archives of the Italian Army].

108 Regia prefettura della provincia di Padova, *Migliadino S. Fidenzio Agitazione donne sussidio richiamati,* Min. Int. Cat. A5G, b. 110, f. 229, sf. 2, ACS; Giovanna Procacci, *Soldati e prigionieri italiani nella Grande Guerra* (Rome: Editori Riuniti, 1993), pp. 147–49.

109 For strict correlation between food shortages and the army collapse: Vanda Wilcox, *Morale and the Italian Army during the First World War* (Cambridge, U.K.: Cambridge Univ. Press, 2016), p. 107. On the more military causes, John Gooch, *The Italian Army and the First World War* (Cambridge, U.K.: Cambridge Univ. Press, 2014), pp. 226–46.

110 Wyldbore Smith, memo, *Tonnage for Italy,* 25 October 1917, CAB 24/29/91, TNA.

111 Halpern, *La Grande Guerra nel Mediterraneo,* vol. 2, pp. 202–203, 206–208; Salter, *Allied Shipping Control,* pp. 150–55.

112 See Marcuzzi, "From the Adriatic to the Mediterranean," pp. 482–83.

113 Friedman, *Fighting the Great War at Sea,* p. 12.

114 Avner Offer, *The First World War: An Agrarian Interpretation* (Oxford, U.K.: Clarendon, 1991), pp. 366–67.

115 Alexander Watson, *Ring of Steel: Germany and Austria-Hungary at War, 1914–1918* (London: Penguin, 2014), pp. 359–77; Osborne, *Britain's Economic Blockade of Germany,* p. 186.

116 Francisco J. Romero Salvadó, *Spain, 1914–1918: Between War and Revolution* (London: Routledge, 1999), pp. 38, 69–73, 76–77, 83–84, 168–71; Zisis Fotakis, *Greek Naval Strategy and Policy, 1910–1919* (London: Routledge, 2005), pp. 132–34.

117 Sondhaus, *Great War at Sea,* p. 348.

118 Greenhalgh, *Victory through Coalition,* pp. 132, 134, 169, 172.

119 Paolo Frascani, *Il mare* (Bologna: Il Mulino, 2008), pp. 128–29, 138–39; MacGregor Knox, "The Sea and the Rise of the Dictators: Italy, 1919–1940," in *The Sea in History,* ed. Christian Buchet, vol. 4, *The Modern World,* ed. N. A. M. Rodger (Woodbridge, U.K.: Boydell, 2017), p. 543.