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An Analysis of the French economic industrial and military mobilization in the Revolutionary and Napoleonic wars 1789-1815

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Introduction

The aspiration of this article is to cast new light on the economic mobilization of France during the Revolution and the Napoleonic wars, from 1789 to 1815. During this period, France faced seven opposing Coalitions and managed to defeat six. This feat is often attributed to the tactical and strategic thinking of Napoleon Bonaparte. However, a careful assessment demonstrates that behind Napoleon's intellectual capacity there was an important domestic economic apparatus that was associated with ruthless economic exploitation of the occupied territories. However, the country was eventually defeated under the pressure from the combined superior economic, demographic, industrial combined strengths of the Allies and the tactical military skills of the allied leadership in Waterloo. This examination will first provide an overview of the industrial and military mobilization during the 1789-1814 period and then an assessment of the fiscal and monetary policy in the same period. Next, trade policies of the same period will considered the economic contribution of France's allies to the war

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effort will be discussed. Finally, the economic and military mobilization in the 100 days period up to the battle of Waterloo will be explored followed by the author's conclusions.

Economic, industrial and military mobilization in France (1789-1814)

The General Framework Of Economic And Industrial Mobilization

The French Revolution of 14 July 1789 was the result of a chronic financial crisis caused by French military and economic support of the American Revolution, 1775 to 1781. The French Minister of Finance, Jacques Necker, a banker, was dismissed in 1781. However, Necker's popular support and immense organizational abilities returned him to his post in 1788. On 11 July 1789, three days before the start of the Revolution, King Louis XVI dismissed him again for a second time. One of the first acts of the Revolution was to increase the money supply by 400 million livres in banknotes (the livre was the currency of France between 781-1794). Yet, for this huge amount of money, there was no collateral of gold or silver reserve. It was assumed that the confiscation of the Church wealth and the confiscation of the royal properties (valued at 2 billion livres at least), was adequate collateral in order to avoid any inflation rate increases. In September 1790, an additional increase of of 800 million livres was decided upon. It was also decided that the maximum amount of the money in circulation could not exceed the sum of 1.2 billion livres. Practically, however, it was difficult to control the exact level of money supply because just in the region of Paris alone, there were 63 private printing / issuing houses with the privilege of money printing and, in 1792, the start of the war required higher expenditures. In January 1793, the total money in circulation was valued at almost 3 billion francs, more than double the original sum. On 28 February 1793, hundreds of shops were looted and huge amounts of consumer goods were stolen (clothes, bread and other foodstuff). This development forced the government to pay 7 million francs to the population in order to restore social stability and calm. Draconian measures were immediately necessary to face the problem of forgeries, counterfeit currency and the gold and silver black markets. By July 1795, total money in circulation had increased to 4.4 billion francs and the exchange rate of 100 francs in paper currency dropped from 4 to 2.5 gold francs. By February 1796, one gold Louis currency from an

initial exchange rate of 25 paper banknotes was equal to 7,200 paper francs.[2] (the Gold Louis was introduced in 1640 and was replaced by the French Franc during the Revolution).

From mid-1796, the countries of the anti-French coalition decided to trigger inflation in the French economy by printing and circulating 4 billion counterfeit FF banknotes. On 16 July 1796, the French government was compelled to abolish all banknotes and revert to having only metallic (gold, silver or bronze) coins in circulation. However, by the spring of 1797, in spite of the change of currency there were still 21 billion paper banknotes in circulation. If the government bonds were also added then the total value of the nominal money supply was 70 billion francs.[3] Thus, Napoleon had to face immense inflationary pressures in the economy (which he faced successfully with the abolition of the paper currency and the return to gold, silver and bronze coins).

At this point, it is essential to note, that the Napoleonic Wars occurred in a conflicting economic environment. On one side, the existing financial framework was negative; yet, on the other side, immense economic progress occurred with the transformation of the economic structures of the real economy. To illustrate, coal production increased from 250,000 tons in 1794 to 800,000 in 1814. The production of iron increased from 60,000 tons to 112,000 tons and the salt production (from salt-mines) increased from 40,000 tons to 150,000 tons over the same period.[4] In this framework of economic-industrial transformation, the French defence industry was developed immensely. The industry was developed since the production of the raw materials necessary to produce weapons was increased; but as already stated the increase occurred under a financial constraint which could provide limited financing.

In 1792, France had a reserve (stock) of just 158,233 rifles and the annual production was just 42,000 items.[5] It was obvious that the defence industry had to become more productive in order to supply the French Army that was mobilized

[2] John K. Cooley, *Currency Wars How Forged Money is the New Weapon of Mass Destruction* (Skyhorse Publishing, 2008), pp. 99-104.
[3] Ibid., p. 104-107.
[4] B. Weider & E. Gueguen *Napoleon: The Man who Shaped Europe* (Spellmount, 2004), p. 81.
[5] M. Glover, *Warfare in the Age of Bonaparte* (Pen & Sword, 2003), p. 22.

between August-December 1793 a total of 1.5 million men under the mass conscription measure of war minister Lazarde Cornot.[6] In 1800, the French defence industry was comparable to that of other major European nations. The main factories were located in the towns of Paris, Charleville, Saint-Etien, Mombage, Clermont-Ferraint, Montopant, Oton. Between 1789 and 1795, artillery production doubled from 1,300 to 2,600. In addition, rifle production increased and rifles stocks increased from 100,000 in 1789 to 245,500 in 1791. From 1803 to 1814, French industry produced 2,659,397 rifles and the army was able to seize another 700,000 from various battlefields. Other sources, point out, that during the 1805-1815 period the defence industry produced 3,900,000 small arms (pistols, rifles, muskets). The French defence industry was more developed compared to the British in 1803, but by 1811, its advantage had disappeared. The French ammunition industry also grew. Every artillery gun had on average a nominal supply of 147-300 shells during the Napoleonic Wars. In fact, the average actual supply of shells per artillery gun during the Russian campaign of 1812 was much higher, a indicator of immense industrial mobilization, between 670 and 1,100, a number which according to van Creveld: "figures, that do not compare all badly with those of an industrialized and highly militaristic Germany one hundred years later."[7] Every soldier had a supply of 60-80 bullets. Thus, each formation of 8,000 men had a reserve supply of 97,000 rounds of ammunition. In July 1812, the Imperial Guard had at its disposal 1,224,000 rounds of ammunition. The French defence industry reached its maximum production during the era of the Russian campaign in 1812, and this demonstrates that French logistical support in ammunitions was extensive. [8]. This however was the only French advantage. The supply of food and fodder was limited and could not cover the needs of the French Army.[9]

[6] Chris McNab *Armies of the Napoleonic Wars* (Osprey, 2009), p. 20.

[7] Martin Van Creveld, *Supplying War* (Cambridge, 2004), p. 63. The total number of artillery guns was greater than 806 (see below) which the above source provides. This number of 806 refers to the guns and the shells that were in stock. The number of first line French guns and shells and the number of guns and shells in various fortifications have to be added. Thus, total number of guns and shells must have been higher.

[8] The Imperial Guard had 697,000 rounds and its so-called 'Polish Divisions' had 527,000 rounds. See A. D. Harvey, *Collision of Empires Britain in Three World Wars* (Phoenix, 1994), p. 54; Digby Smith, *Armies of 1812* (Spellmount, 2002), p. 101-103; C.I. Archer & J.R. Ferris & H. H. Herwig & T. H. E. Travers, eds., *World History of Warfare* (Cassell's, 2003), p. 392.

[9] Digby Smith, *Armies of 1812* (Spellmount, 2002), p. 10-31 for detailed analysis of the French logistical system.

The French shipping industry, however, was weak. In 1789, France had a total of 5,268 ships, 3,270 above 100 tons tonnage, with a total commercial and military tonnage of 729,340 tons. By 1815, this had been reduced to 80 ships. Between 1793 and 1815, the French Navy lost 377 warships to the British Navy (9 ships with 98 or more artillery guns each, 19 ships with 80 guns each, 87 ships with 74 guns each, 24 ships with 64 guns each, 9 ships with 50-54 guns each and 229 frigates) The French commercial navy was also depleted as the number of sailing ships was reduced from 1,500 in 1801 to 179 in 1812. We also point out that the remaining artillery guns of the French ships were of lower quality compared to those of the Royal Navy with lower fire speed.[10] In addition the French commercial navy was also reduced to 1,500 in 1801 and to 179 by 1812. In addition during 1793-1814, France lost another 1,031 confiscated (former private) ships with 9,400 artillery guns and 69,147 sailors.[11] These colossal French naval losses changed the balance of naval power and made the Royal Navy of Britain the real master of the sea.

The maximization of the agricultural production was another strategic factor for the prolonged war. Britain, in spite of the French blockade and despite a population increase between 1801-1811 from 8.8 million to 10.1 million increased their agricultural production and enjoy adequate food supplies. In contrast, French agricultural production, as well as that of Europe, did not cover demand resulting in high inflation and lower morale. Napoleon increased the production and varieties of food available in several ways. For example, he cultivated 100,000 hectares of French land with beetroots and introduced the systematic cultivation of potatoes. He also introduced a special land registry which by 1814 had registered 37,000,000 plots of land with their owners.

[10] See A. D. Harvey, *Collision of Empires*, p. 52, 58-59, 119-127; Glover, *Warfare*, p. 173-243. In order to understand the economic cost associated with the capture of the French ships we point out that one ship with 100 guns required 5,750 loads of wood (1 load=50 cubic feet of wood or a big tree). The construction of one ship with 74 guns required almost 3,500 loads of wood. Finally, the construction of one ship with 50 guns required 2,450 loads. See: Digby Smith *The Decline and Fall of Napoleon's Empire* (Greenhill Books, 2005), p. 228. From the above data, it is obvious that the French Navy lost between 10,826-10,862 artillery guns with the loss of these 148 ships. Turning to French frigates most classes had 32 artillery guns per ship however there were 8 frigates with 40 guns each, 3 frigates with 38 guns each and 1 frigate with 34 guns. Thus the capture of 229 frigates would cost to the French Navy at least another 7,328 guns, thus making total artillery losses of at least 18,154 guns, [for the list of French frigates see www.wikipeadia.org]

[11] Harvey, *Collision of Empires*, p. 124.

However, despite an increase of 500% in agricultural production between 1800 and1815 the demand for food was still greater than supply in almost every campaign.[12] Thus, both the French Army and the French population (home front) was facing a chronic nutritional crisis with harmful effects on both morale and public health.

The Economic And Industrial Mobilization In Each Campaign (1796-1814).[13]

French campaigns in the Napoleonic wars suffered from logistical support problems although the intensity differed from one battlefield to another. In the first campaigns, there was a shortage of food, money, and weapons and ammunition. However, as time went by, the problems related to weapons and ammunition supply were eased, leaving problems with food and fodder.

The Italian Campaign (1796-1797)

The Italian campaign (April 1796) was the first one with problems. Napoleon had at his disposal 45,000 men at the cost of 1 million livres. However, the French Treasury could afford to finance the force with just 300,000 livres due to money shortages. This forced Napoleon to follow a policy of confiscation (looting) of both money and goods. This policy became a rule in almost all future campaigns. Napoleon paid every soldier

[12] Weider & Gueguen, *Napoleon*, p. 80. That is why Napoleon asserted that "an army marches on its stomach".

[13] Here we point out that we do not analyse the French campaigns in Spain due to space limitations. For this campaign we simply point out that Napoleon had deployed in Spain 165,000 men in June 1808 but by July 1811 there were more than 350,000 French soldiers. By January 1812 the number of French troops and their allies was reduced to 232,500. An idea about the intensity of the Spanish war is given by the seizure of Saragossa from the French Army from June 15th to December 1808. Only in December the French artillery fired 42,000 explosive shells into the city killing 350 people per day during that month. Soragosa has fallen to the French Army by mid February 1809 and from its 34,000 army strong garrison only 12,000 were captured alive. The overall human losses exceeded the 50,000 level. D. Bell, *The First Total War* (Bloomsbury, 2007), p. 280-284 and Digby Smith *The Decline and Fall of Napoleon's Empire* (Greenhill Books 2005), p. 135. In the Peninsula War the French enjoyed a military advantage since the maximum strength of the British forces were 80,000 (in 1813); however already in October 1811 the British intelligence pointed out that "the French Army in Spain was in financial trouble unable to to pay any new recruits or tend the wounded". R. Knight *Britain Against Napoleon* (Allen Lane, 2013), p. 420-422. Thus, the French defeat in Spain can be associated to economic disadvantages.

20 FF (1 gold coin) for every horse of good quality from a village or a town. In two days, in the town of Mondovi the French confiscated 40,000 portions of biscuits, 8,000 portions of meat and 8,000 bottles of wine.[14] During the invasion of Lombardy, between May and June 1796, the economic exploitation intensified. On 4 May 1796, the Duke of Parma was asked for to pay 250,000 francs in cash, 50,000 livres, 200,000 bulls and 200 donkeys and mules to the French Army. However, by 9 May, the Duke provided 2,000,000 livres, 1,200 horses for open carriages, 400 cavalry horses, 100 saddles, 1,100 tons of wheat, 550 tons of oat and 1,200 oxen. (The food supplies were given in just 15 days). The Duke also gave 20 paintings which Napoleon himself had chosen from the Duke's personal collection. One week later, it was the Duke of Modena who provided to the French 7,500,000 livres; 3 million were given in order to cover the army expenditure and the remaining 4.5 million would be deposited in a month's time in a bank of Genoa and would eventually (and most probably) deposited to the personal bank accounts of Napoleon. In addition, the Duke had to provide powder, ammunition and other materials worth of 2.5 million livres, 20 paintings for Napoleon's personal collection and another 30 paintings for various Paris museums (in those Raphael works were included). By the beginning of June, the total value of all confiscated assets was higher than 20 million livres; 6-8 million livres, and the rest in confiscated gold and silver, deposited in a special account of a Genoa bank. Total cash confiscated, (including that which was made by soldiers), were estimated at 10 million livres. As well the looting of various goods was enormous, including 6,000 pairs of shoes, 20,000 uniforms, more than 1,500 oxen, over 1,000 horses, 200 artillery guns, huge amounts of ammunition, thousands of rifles, thousand meters of silk, clothes, etc. It was not just the economic exploitation since, as Napoleon pointed out, his men would have to enjoy life by dressing themselves smartly and having beautiful women around them. Under this order the local factories were forced to produce and provide to the French army 20,000 hats, 100,000 new shirts, 15,000 raincoats and 50,000 jackets. In addition, 2,000 new horses were given by the locals to the French army in order to enhance transportation. The French occupation of the port of Ancona resulted in the looting of 100 paintings, sculptures and 500 old manuscripts. The French confiscated more than 34 items from the Ambrozian Library of Milan and other museums and churches, including one manuscript aged 1,100 years old from ancient Egypt, one manuscript of Virgil, as well

[14] Robert Asprey, *The Rise and Fall of Napoleon Bonaparte*, Vol. 1 (Abacus, 2002), p. 138-139.

as paintings of Rubens, Raphael, and other famous painters. The paintings and sculptures were used either as donations to generals and senior officers –thus resulting to higher morale in army ranks and support for Napoleon's causes- or as a war finance source by selling them to art collectors.

Then it was the Pope's turn to provide the Vatican's economic contribution. The Vatican paid to Napoleon 15.5 million livres, in cash and an additional sum of 5.5 million in goods. This "contribution" made Napoleon very nervous since he expected much higher amounts; 30 million in cash and 10 million in goods. However, the Vatican contribution was smaller because the French delegation had revealed to the Pope's delegation that at that specific point in time, the French army was unable to invade Rome and so the threat of invasion) did not materialize. Another trap failed as well. Napoleon expected to extract another 5-6 million livres, from the town of Venice. He believed that by allowing the Austrians to capture some Venetian castles, the town would ask for his assistance, giving him the leverage to extract funds. However, the Paris government refused to allow him to march towards Venice, infuriating him. According to Hooper, the French "also took 4,000,000 livres from Bologna, 3,000,000 from Ferrara and 2,000,000 from Faenza; and, in addition, 4,700,000 livres were extorted in provisions and goods from the unhappy Legations".[15] By the end of August 1796, Napoleon's forces had consumed all their supplies. They requested total supplies of 120,000 portions of biscuits, 240,000 portions of cognac, 3,000 pairs of shoes, flour quantities for the preparation of 120,000 portions of bread, fodder quantities for 2,000 horses for ten days duration. From the above quantities the army needed for immediate consumption 60,000 portions of biscuits, 120,000 portions of cognac, 60,000 portions of flour. The need for fodder was double the available quantities, adequate only for 2,000 horses and not for 4,000.[16]

With these supplies, the French army started the autumn campaign of 1796, which was a success by January 1797. New lootings followed. The town of Ancona gave to the French Treasury an additional sum of almost 3 million livres and the Vatican was forced to sign an agreement to provide more money and goods compared to the previous one. In addition, the Vatican was forced under the pressure from the French

[15] George Hooper *The Italian Campaigns of General Bonaparte in 1796-1797 and 1800* (Smith Elder & Co. London, 1859), p. 30 and 48; Robert Asprey, *Rise and Fall*, p. 147-153, 157, 159, 162.
[16] Asprey, *Rise and Fall*, p. 180.

weapons to pay the French army 15 million livres, in gold or diamonds, and the outstanding amount of 15 million livres from the former agreement. As well, the Vatican had to agree to accept only French goods in its territories. Finally, the territories of Avinion, Bologna and Ferrara were placed under French control and additional artistic treasures would be transported to France.[17]

When, in April 1797, Venice protested to the French, Napoleon seized the opportunity to act against the "Venetian arrogance" by confiscating all the Venetian ships in the ports of Trieste and Ancona, a total of almost 50 ships and cargo. Then Napoleon threatened to invade Venice and, to avoid a French invasion, the city was forced to provide 3 million livres in cash, material for the construction of warships and commercial ships valued at another 3 million livres, 3 warships, 3 frigates, 20 paintings and 500 manuscripts.[18]

The Egyptian campaign (1798-1799)

After the triumph in Italy, Napoleon proposed an invasion of Britain. According to the plan, a total invasion force of 36,000 men would be required at a cost of 30 million livres in cash.[19] Although initially approved, the plan was soon abandoned due to the shortage of the numbers of warships and commercial ships. Rather, a more indirect strategy approach was followed. According to the new plan, a force of 25,000 men with 3,000 horses, 35 big ships, 400 small ships and 400 gun-boats with 1,500 artillery men would invade British Egypt. The ultimate objective would be India and the cost of the campaign was estimated at 8-9 million francs. The first problem was the financial shortfall. In order to raise the funds required, the town of Verne in Switzerland were looted of its savings, as well as a big part of the Dutch savings and of Rome's savings. In this way, the immediate financial expenses were covered although the long-term costs

[17] Ibid., p. 210.
[18] Ibid., p. 219.
[19] Ibid., p. 242. According to Glover, *Warfare*, p. 193, the French invasion force was between 30,000-56,000 men (which would invade in waves), with the support of 170 warships, and commercial ships of 20,000 tons tonnage.

of the campaign –remained unsatisfied. The naval expenditure alone would require the sum of 40-50 million francs.[20]

The Egypt campaign started on 19 May 1798, when the French fleet (200 ships) sailed from the ports of south of France. The first objective, 9 June 1798, was the island of Malta. The island cooperated immediately with Napoleon and provided 1,200 artillery guns, 30,000 rifles with 7,000 barrels of powder and explosives, 2 warships, 4 galleys (with 700 Turkish slaves), the port of the island, as well as the treasury which had almost 5 million francs to the French. Most of that money went to the French Treasury in Paris. However, Napoleon kept 700,000 francs for his personal needs, mainly by melting gold and silver bars, as well as gold church lyrics and items. He also took with him 2,000 men form the local guard, leaving 4,000 French soldiers as occupation force on the island. He also freed the 700 Turkish slaves as well as a small number of men from the old Knights.[21]

After the invasion of Egypt, Napoleon set as a primary objective the alliance or at least the cooperation of the locals. He wanted to convince them that his aim was to free them from the British rule and that he did not want to replace British occupation with French. By constantly making promises, he extracted an immense amount of aid. Only in a few cases was he forced to pay for supplies. He bought 300 horses and 500 camels from a local, and rented another 1,000 camels with their men.[22] Joined by local forces, he moved towards Cairo. After a series of low intensity battles, he fought the Battle of the Pyramids on21 July 1798, where an army of Mamaluk Turks perished. The French losses were light, just 30 dead and 120 wounded. The Turks, however, lost 2,000. The French captured 400 camels, 50 artillery guns, and large quantities of silk and clothes. The clothes were of immense value due to the gold and silver on them. Even better, in many cases, the pockets of these clothes had 300-500 gold coins each.[23]

[20] Asprey, *Rise and Fall*, p. 250-255.
[21] Ibid., p. 258-259.
[22] Ibid., p. 263.
[23] Ibid., p. 269. The data for the French fleet differ from source to source. According to Michael Glover *Warfare*, pp. 193-194, points out that there were 224 ships with 24,000 infantry men, 3,000 artillery men, 4,000 cavalry. The ships were escorted by 13 ships of the line, that is warships (1 with 120 artillery guns, 3 with 80 guns, 9 with 74 guns), 6 frigates and other smaller vessels. According to N. A. M. Rodger, *The Command of the Ocean A Naval History of Britain 1649-1815* (Allen Lane, 2004), p. 457, the French fleet had

After the victory of the Battle of the Pyramids, Napoleon entered Cairo. However, behind the scenes of the victory, the French were facing immense economic problems. For example, when the French landed in Alexandria they had a sum of 1-4 million francs in cash, when the monthly army salary payments alone were almost 1 million francs. In addition, the army had to finance transportation costs, food supplies, residence costs, guns and ammunition, uniforms, medical equipment and other materials. The French believed that in Egypt they would find money, goods and treasures equal to those of Italy. However, the local communities could support the French forces with limited amounts of money and quantities of goods. Thus, the Egyptians gathered a total of 1,350,000 francs; much smaller from what the French anticipated. There were also food shortages as the available quantities of rice, vegetables, oxen, and seeds could not meet the demand. There was a shortage of horses and timber so local fortifications could not be protected with fences. There was no timber to build carriages, wagons and corbels. Napoleon panicked and realised that supplies had to come from Malta. At the beginning of August 1798 an order was given to transport from Malta to Egypt 220,000 livres of biscuits, 100.000 pints of wine, 30.000 pints of vinegar, 30,000 pints of cognac, 65,000 livres of lard. From France an additional amount of supplies was expected as follows: 200,000 pints of cognac, 1,000,000 pints of wine, thousands of yards of clothes and embroideries, soap, olive and cooking oil. In addition, specialized personnel, was expected, from France (20 surgeons, 30 pharmacists, 10 physiotherapists, 100 gardeners with their families with various seeds, 100 prostitutes, blacksmiths etc.). These specialized personnel did not only support the army needs but was used also for the medical and the aesthetic needs of the local community. The idea was that the local population would find the French occupation beneficial thus the locals would support the French presence.

However, until the supplies from Malta and France could arrive, Napoleon had to use his own cash reserves in order to finance the needs of his army. He was forced to melt gold and silver bars that he had taken from Malta in order to mint coins. Thus, he was able to pay the salaries of the army and to buy various goods in order to supply his

300 transport ships which transported 30,000 men and they were escorted by 13 ships of the line and 7 frigates. All the ships were modern with the exception of 3 which were old.

army.[24] However, the supplies from Malta and France had still not arrived when, on 1 August 1798, the British fleet hammered the French navy in the gulf of Aboukir. The French navy lost 11 ships including the biggest ship of its time, the "Orient" (L' Orient), with 120 guns. The British lost just 3 vessels and 9 ships whose masts were completely or partially destroyed.[25]

After the defeat at Aboukir, the naval supply routes were practically destroyed and the French Forces in Egypt had to intensify their local exploitation in order to survive. Napoleon decided to develop the local economy and the French public administration proved extremely efficient at it. Napoleon established the Egyptian Institute of Arts and Sciences, which included departments of physics, mathematics, political economy, arts and literature. The highest-ranking professors were paid 400-500 livres per month, as opposed to the lower ranks who had a monthly salary of just 50 livres. In November 1798, Napoleon organized an expedition with 1,200 men, 200 cavalry, 1,000 camels with supplies and 4 gun boats to explore the Red Sea. A second expedition explored the Nile River, created a topographic map for all Egypt and recaptured the Rosetta Stone.

Across Egypt, private entrepreneurial initiative was encouraged with the development of restaurants, shops, trade and infrastructure (roads, bridges, canals etc.). In addition, the port of Alexandria fortifications were built with 70 guns aimed outward across the Mediterranean Sea to guard against British attacks and another 80 guns were aimed inwards. The town had enough provisions for one year. In addition, fortifications were constructed in other ports, including Rosetta and Damietta. However, the French administration could not ignore corruption within the local population as well as from French individuals that caused problems to the economic mobilization and the support of war operations. To illustrate, reports from the period August 1798 to January 1799 point out that of a cargo of 60,000 biscuits only 20,000 were actually (and finally) delivered to the army. In a another case, Napoleon was infuriated when he learned that one of his senior officers (General Kleberg) had embezzled 100,000 francs in order to cover the needs of his army; when that amount had been originally granted to the Navy. The medical supplies were always in short supply and the number of medical doctors inadequate, the morale of the medical force and their living conditions were

[24] Asprey, *Rise and Fall*, p. 272-273.
[25] Ibid., p. 280-281; Glover, *Warfare*, p. 193-195.

poor. Corruption was also rife within the local population. In September 1798, it was revealed that although 250 local workers were employed for the construction of the fortifications of Cairo 500 were paid! Thus, there were 250 ghosts that obviously did not exist and their salaries were embezzled.[26]

In spite of the difficulties, Napoleon continued the campaign. By March 1799, the French flag was waving over the towns of Ramala, Gaza and Haifa. At the beginning of April, the French army was in the town of Nazaret.[27] However the French *élan* could not continue. The supplies in food, and medicine were very low, and the economic cost was astronomical, since by June 1799 the monthly expenditure for fortifications only was between 200,000-300,000 francs. Under the circumstances, Napoleon requested the economic assistance of his generals and asked them to contribute 250,000 francs each from their personal wealth, as well as 40 horses. Napoleon also requested 5,000 infantry soldiers, 500 cavalry, 500 gunners, 3,000 rifles, 3,000 pistols, 1,000 cavalry swords from Paris. However, it was not just the shortage of men and material that created problems. On 10 June 1799, Napoleon was informed that an anti-French coalition had coalesced in Europe with the participation of Britain, Austria, Russia and he decided to abandon Egypt. He returned to Cairo on 11 August and to France by 9 October 1799. A new chapter in the history of Europe was about to be written.[28]

The European campaigns (1800-1811)

Following a short period of domestic instability between November 1799 and February 1800, Napoleon became the ultimate ruler of France and started the re-organisation of the army and of the navy immediately in order to face the new anti-French coalition in Europe. The needs were great. The artillery had a small number of horses in order to carry guns and many units had shortages of ammunition, food, powder and carriages. There were limited numbers of uniforms, small arms and the training had gaps. In Italy, the French armies of 30,000 men had daily rations, which were just the 50% of what the military anticipated. Even the Supreme French

[26] Asprey, *Rise and Fall*, p. 284-298, 318.
[27] Ibid., p. 304, 308.
[28] Ibid., p. 310, 314, 316, 321, 324-326.

Commander in Italy General Massenna faced rationing. The French Armies in Switzerland and Germany, 120,000 men, were in a similar position. Napoleon confronted the crisis quickly. In February 1800, he sent 1.5 million francs to the Italian contingent and 6 million francs to the French army in Switzerland-Germany. In Lucerne, Switzerland, he also established a supply depot with 100,000 bushels of barley, 500,000 portions of biscuits and 1,000,000 rounds of ammunition. He sent 200,000 livres of lead for shell production to the artillery depot in the town of Auxonne, whereas new armament factories and iron-ore facilities were established in Geneva. In the town of Villeneuve, Martigny and in the village of St. Pierre another 1,000,000 biscuits were also stored. In Paris alone, by April 1800, the factories had produced 5,000,000 rounds of ammunition but due to the lack of transportation meant that the ammunition was stored and not given to the French army.[29] Napoleon reienforced the Army of Italy and what followed was the battle of Marengo (14 June 1800) which resulted in a great French victory. The Treaty of Amiens, signed 25 March 1802, was a triumph for France.

After the Treaty of Amiens, Napoleon once again targeted Britain. In January 1803, the first preparations for an invasion included an allocation of 1.7 million francs to the cavalry. The sale of Alaska to the USA followed for the sum of 60 million francs (=$12 million). Napoleon planned to use the money in order to finance the invasion of Britain. The French invasion plan had envisioned a massive landing of 100,000 men in the beaches of Sussex with the support of 2,000 ships of all kinds (large and small gunboats, transport ships, fishing boats etc). Every gunboat would have between one and four major artillery guns, another number of small guns, food supplies for 15 days, water supplies for 10 days, only enough for the sailors but not the soldiers. In addition, every ship would carry 1,200 portions of biscuits, 1,200 portions of cognac, 8 copper furnaces for food cooking, 8 water depots. Each soldier would have one rifle, 30 bullets, 3 small swords and bayonets, 4 livres of bread and adequate wine. Furthermore, every ship would carry one to two artillery guns for the army, 2 horses at least with fodder supplies for 5 days, cereals for other 5 days and adequate water supply. At this rate, the furnaces would produce bread for 80,000 men, there would be available 120,000 pairs of boots, 80,000 jackets, 1,200,000 food portions in boxes, and 3,000,000 portions of cognac in wine sacks. These detailed but impressive statistics demonstrate the level of

[29] Ibid., p. 355-363.

logistical support, the extensive requirements for front line troops and the scale of economic mobilization.

In order to open a second front to the British, Napoleon aimed to provide to the Irish with 25,000 troops armed with 40,000 rifles, artillery guns and ammunition in order to help them fight. According to the original plans, these forces would be ready in 11 months, in November 1803. The plan although well detailed could not be implemented since France did not have the capacity to build 2,000 vessels and there were not enough sailors for such a huge force even if the construction capacity was achieved. The preparations for the Army also faced problems. For example, the Ministry expected that while the Toulon factory was able to produce 10 artillery guns per day, the current daily production was just one gun because the French government owned the sum of 300,000 francs to the factory for unpaid orders from the previous two years. In order to resolve the problem of gun shortages, the French army set the target of 250 new guns per month. The financial cost of the campaign was also higher than originally calculated since the cost of the masts of the ships by themselves was 20 million francs.[30]

Under these constraints, the invasion force was not ready in November 1803, and was not ready until 8 August 1805! The time delay obviously affected military planning however it also had positive ramifications since at that time, French power was immense: 18 vessels with three musts with 34 meters length, 572 gun-boats, 81 transport infantry ships, 405 horse transport ships, 80 artillery transport ships, 19 other vessels, 3 artillery ammunition ships, 320 prisoner transport ships with guns, 349 smaller vessels with the ability to penetrate other ships, and 596 other vessels. The invasion force was 167,590 men strong with 9,149 horses.[31]

History, however, had different plans. If the invasion force was to disembark on British soil, a minimum naval dominance of five days was needed in the Channel. However, during August 1805, the weather conditions were poor and British maritime too strong. These conditions forced Napoleon once again to re-examine his strategy,

[30] Ibid., p. 450-452, 456-457, 460, 462.

[31] Glover, *Warfare*, p. 224. According to a different source the invasion force had 1,064 officers, 163,800 men, 19,635 cavalry horses, 3,742 artillery transport horses, 3,000,000 food portions, 600 oxen and 3,000 sheep. See: N. A. M. Rodger, *The Command of the Ocean*, p. 530.

changing priorities and objectives. The time delay of the campaign made the French stronger but this also applied for the British. The bad weather was another British advantage. Thus, under the circumstances, Napoleon was facing a dilemma: Either proceed with the initial plan against Britain or use the immense French might against the continental powers that were allied to Britain, (i.e. Austria and Russia). Napoleon decided to go for the second option.

The first target were the Austrians and the French entered Bavaria without a prior declaration of war (7 September 1805). During the August-September 1805 campaign, Napoleon requested 700,000 portions of biscuits from the producers of Northern France and Mainz, however, by 26 September, only 380,000 portions had been delivered. The shortage of food and fodder was again a major problem across the various campaigns and especially during the Russian campaign.[32] The food shortages were not associated with low agricultural production levels but primarily with limited transportation means and networks that did not allow the supply of the armies in various battlefronts. When, on 13 November 1805, the French Grand Armée occupied Vienna, one of its citizens gave the following description:

> Many [of the French soldiers] were blouses of peasants or shepherds [with] animal skin. Some have a more bizarre appearance [with] long pieces of meat or ham from their belts. Others march with bottles of wine. Their poverty does not obstruct them to lit their pipes with Viennese banknotes.[33]

Up to 1806, France hoarded huge quantities of various agricultural goods including wheat for the invasion of Britain. By autumn 1809, however, the first shortages of food were beginning to be felt, especially since the agricultural production of that year was reduced. Despite the shortages and supply problems due to

[32] Van Creveld *Supplying War*, p. 49-56 and 59-60. According to A. D. Harvey, *Collision of Empires*, p. 143, there were 500,000 portions of biscuits in Strasbourg, 200,000 in Mainz and another 1,000,000 would be granted to the French between Wurzburg and Ulm. An additional number of portions on 4,500 carriages were expected from the Bavarian government. However, only the biscuits of Strasbourg and Mainz were eventually available. However the problem with this piece of information is that is not only referred for the 1805 campaign but also during the 1812 major offensive against Russia. (see below in the text and especially Order of 23-8-1812). Since the term "Grand Armée" was introduced since 1805 with an average strength of 200,000 men it is likely that a repetition of previous orders occurred. Thus it may be the same quantity since there were additional supplies from the other sources.

[33] Lucio Ceva, "Napoleon's Grand Armée," *History* 95 (May, 1976): p. 30-37 especially p. 37. (in Greek).

transportation and the shortages, the French army was victorious. The first great victory occurred at the battle of Ulm, 14-20 October 1805, where Napoleon captured 60,000 Austrians with 120 artillery guns with 300 carriages with ammunition and 3,000 horses. The capture of the Austrian fortifications in Braunau followed on 30 October and Napoleon confiscated 40,000 portions of bread, 1,000 sacks with flour, 300,000 livres of ammunition and explosives, 6 artillery guns and huge quantities of clothes and uniforms.[34] The greatest victory occurred at the battle of Austerlitz (2 December 1805), where Napoleon destroyed the joint Austrian-Russian forces and captured 180 artillery guns, 400 ammunition carriages, almost 20,000 prisoners and killed or wounded 16,000 Austrians and Russians. At that battle, the French artillery used 50,000 rounds.[35] This level of consumption was extremely high for the era and can be compared with the shell consumption level of the First World War when the opposing armies were supported by a much broader and productive industrial base.

France would be victorious in the battles between October to December 1806.. In Jena, the French captured more than 600 artillery guns, more than 4,700 horses, more than 48 ammunition carriages, food and beverages worth millions of francs, ammunition, uniforms, saddles and other equipment from the Prussians. From the town of Leipsich, alone, the French confiscated British goods valued at 60 million francs, enough to replace the uniforms for the entire French army.[36] From Magdeburg in November 1806, the French captured 20 generals, 800 officers, 22,000 soldiers, 800 artillery pieces, 1 million pounds of powder, and a bridge equipage.[37] The captured supplies and military hardware was immense. It is comparable to what the Germans captured in western Europe in 1940. These supplies provided an immense boost to the logistics of the French Army.

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[34] Asprey, *Rise and Fall*, p. 523, 526, 534-535; Digby Smith, *Napoleonic Wars Databook* (Greenhill, 1998), p. 205.

[35] D. G. Chandler, *Dictionary of the Napoleonic Wars* (Wordsworth, 2003), p. 31-36; Digby Smith, *Napoleonic Wars Databook*, p. 217. For artillery consumption see: Mark Adkin, *The Waterloo Companion* (Aurum Press, 2015), p. 290.

[36] Asprey, *Rise and Fall*, p. 37; Chandler, *Dictionary*, p. 223-234.

[37] Joseph Hepburn Parsons, *Historical Papers upon Men and Events of Rare Interest in the Napoleonic Epoch*, Volume II (The Saalfield Publishing Company, New York, 1914), p. 127.

The next French triumph was incomplete due to the shortage of supplies (7-8 February 1807). The French army under immense stress could not destroy the Russians. Napoleon remarked: "[To win [against] the Russians is a childish game] if only I had bread...with 300,000 portions of biscuits and 18,000-20,000 pints of brandy I would have destroyed my enemies". The French army needed supplies. Although it had received 100,000 pints of brandy, 330 tons of cereals, 3,000 cows from Silesia and another 80 wagons carrying 50,000 portions of biscuits and 2,000 pints of brandy per day from Vienna (amounts apply to all supplies listed) these were inadequate because food demand from exhausted soldiers was high. In addition, by the end of January 1807 in 21 hospitals the French had more than 10,000 occupants hospitalized in average for 29 days. The French Army was also suffering from shoes and boots shortages.[38]

By the end of May 1807, the French army captured the city of Danzig and captured 800 artillery guns, thousands of small arms, huge quantities of wheat that could provide rations for a two-year period for the whole of the army. In addition, huge quantities of wine were captured. As a result 500,000 bottles of wine, 200,000 pints of rum, another 200,000 pints of brandy were send to the army depots in the town of Elbing and every soldier was still able to have one extra bottle of wine as well. In June 1807, the port of Konigsberg was captured and, including 200 Russian ships with food supplies on board which would cover the needs of the French army for a minimum of four months.[39] The financial cost of the campaigns against Prussia and Russia during 1806-1807 period was 213 million francs. In order to cover the cost Napoleon imposed enormous war payments to all German states. These payments varied from 100,000 francs (imposed on small states) to 25,000,000 francs imposed on Saxony. Across Germany Napoleon collected money and goods valued at 560,000,000 francs (£22,400,000) thus the cost of the 1806-1807 campaign was fully covered by German states and there was even a surplus left for France.[40]

In April 1809, another victory occurred, this time against the Austrians. In five days (21-25 April) the French army captured 100 artillery guns, 600 howitzers with their

[38] F. Loraine Petre, *Napoleon's Campaign in Poland 1806-1807.A Military History of Napoleon's First War with Russia* (Sampson Low Marston and Company 1901), p.25.
[39] Asprey, *Rise and Fall*, p. 61 and 67, 73.
[40] F. Loraine Petre, *Napoleon's Campaign*, p.23-25. To illustrate, during the campaign the French Army confiscated across Germany 587,008 pairs of shoes, 16,948 boots, 37,386 gaiters. By comparison the French factories produced just 397,000 pairs of shoes for the Army.

ammunition, 3,000 wagons with supplies and huge resources of cash.[41] After this victory food supplies were once again immense, but for limited time.

During the battle of Wagram, 5-6 July 1809, French artillery used 96,000 rounds of ammunition and achieved another major French victory over the Austrians.[42] However, the French army did not vanquish their enemy completely due to the shortages of food supply. Napoleon asked the immediate dispersal of 600,000 portions of brandy (cognac), 300,000 bottles of wine from its logistical support command in order to alleviate supply shortages.[43] (Alcohol although not food was at the time an important item for the army supply. During autumn and winter times it was used as a "weapon" against cold and it could be used as a substitute for food, since soldiers with less food quantities could be "compensated" by drinking) One year later, on 27 September 1810, the French scored a huge victory in Spain at the battle of Caridad where the French artillery would consume 11,000 shells and 18,000 other ammunition bombs but a Spanish garrison of 4,000 men would be destroyed and the French would capture 100 artillery guns and 7,000 rifles. However the huge ammunition expenditure would force the French to terminate the military operations.[44]

Meanwhile, the food-supply problem became more severe in 1810 when Napoleon allowed the export of 225,710 parcels of cereals and wheat to Britain (in spite of the continental trade embargo).[45] This act can be explained as a diplomatic gesture before the French attack against Russia but also under the mercantilist doctrine.

The Russian campaign (1812)

The French military economic mobilization was at its height during the campaign against Russia. In 1811, Napoleon increased the artillery budget to the astronomical amount of 22.5 million francs and, as a result, created and mobilised an

[41] Ibid., p. 153.
[42] Adkin, *Waterloo*, p. 290.
[43] Asprey, *Rise and Fall*, p. 162.
[44] Ian C. Robertson, *Wellington at War in the Peninsula 1808-1814* (Pen & Sword, 2000), p. 122.
[45] Olson Mancur *The Economics of the Wartime Shortage*: *A History of British Food Supplies in the Napoleonic War and in World Wars I and II* (Duke University Press, 1963), p. 60 and 62.

immense force of 600,000-610,000 men with 150,000-182,000 horses, 30,000 carriages, 1,200-1.372 artillery guns and 36,000 saddlers. In addition to the army mobilization at the beginning of 1811, a four-year armaments programme was implemented for the Navy. According to this plan, the fleet would have 103 major warships and 76 frigates by 1814.[46] Thus, Napoleon's strategy was clear: The first target was Russia; the second was Great Britain. Interestingly enough, Hitler would follow a similar path during the 1940-1941 period.

To supply the invasion force in Russia, supplies were gathered, including 30,000,000 bottles of wine and brandy; these figures were equal to annual production levels. In addition, another 2,000,000 wine bottles were bought from Hungary. The town of Danzig was paid the sum of 2,400,000 francs to purchase and store the following supplies: 5,500 tons of cereals and wheat and another 5,500 tons of sun-oil, with another 1,000,000 seeds of oat, 35,000 cubic meters of hay. In total the town had to feed 400,000 men and 50,000 horses for a period of 50 days.[47]

The supply of armaments was immense. Thus, the 6th Army Corps had at its disposal 1,285,000 rounds of ammunition for the rifles of the infantry, 48,384 rounds for the pistols of the cavalry, 96,768 rounds for the rifles of the cavalry, 180,000 rounds for muskets and 16,000 rounds for infantry pistols; in addition there were 11,788 artillery shells. The 7th Army Corp had 1,235,000 rounds of ammunition for infantry rifles, 180,000 rounds for cavalry, and another 484,200 rounds for all small weapons. There were also 15,626 artillery shells for guns and howitzers. The 8th Army Corp. was equipped with 980,743 rounds of ammunition for infantry weapons, 17,940 rounds for cavalry weapons, 1353/4 livres of lead, 85,935 explosive cartridges, 928,5 livres of powder, 7,065 shells for artillery guns. The 2nd Cavalry Corp had 32,064 rounds of ammunition, 580 explosive devices, 3,000 explosive cartridges, 118 kg of matches, whereas immense quantities of other equipment were stored in places like Vilna and Bromberg. Finally, the 4th Cavalry Corp was equipped with 76,673 rounds of ammunition, 11,000 explosive cartridges, 8 howitzers with 1,332 shells, 16 artillery guns

[46] Smith, *Decline and Fall*, p. 135; C.J. Summerville *Napoleon's Expedition to Russia The Memoirs of General Count Phelippe de Segur* (Robinson, London, 2003), p. 12; Asprey, *Rise and Fall*, p. 226. We point out that the gathering of horses was a problematic process. To illustrate, the French army, stationed in Germany, during January 1811 had a shortage of 18,000 horses and, by June 1811, there was still a deficit of 9,000 horses. See Asprey, *Rise and Fall*, p. 229.

[47] Ibid., p. 241; Van Creveld: *Supplying War*, p. 63.

and other materials.[48] All these detailed statistics demonstrate the scale of mobilization and the economic effort for the enormous logistical support of the invasion force.

Sources suggest that the Grande Armée had 200,000 animals (horses, mules, donkeys, etc.) at their disposal. Thirty thousand horses were required for the artillery and around 80,000 by the cavalry. (The remaining 90,000 animals - mainly oxen - were a great source of supply for daily fresh meat and milk products). Back to transportation, in total, there were 26 transport battalions for all types of goods. From those four battalions had 600 light carriages with a transport / load capacity of 600 kg each. In total, there were 2,400 carriages. Another four battalions had 600 heavy carriages with a transport capacity of 1,000 kg each. There were a total of 2,400 carriages from those heavy types as well. Finally, there were another 18 battalions with 252 carriages with a load capacity of 1,500 kg each. In total, there were 4,536 carriages of that type. The total number of all types of vehicles-(carriages, wagons, mobile hospitals, furnaces etc.) - was 25,000. The total number of all types of foodstuff is unknown, however, the Grande Armée, had a severe food problem to resolve. For example, the towns of Stettin and Küstrin were asked to produce 1,000,000 portions of biscuits by April 1811. After considerable time, under an Order of 23 August 1812, Napoleon requested 500,000 portions of biscuits from Strasbourg and another 200,000 portions from Mainz within 25 days. In addition, the Bavarian towns of Ulm and Wurtzburg were expected to produce another 1,000,000 portions. However, these quantities could not easily reach the front line soldiers.

The portions from Strasbourg and Mainz would feed 116,000 men for 6 days and the Bavarian production would cover the demand for 9 additional days, assuming adequate bread supply in both cases. However, the French towns could produce only 600,000 portions and only 300,000 could reach the armed forces. The Bavarian production was non-existent.

Thus, on 15 September, the French asked the Bavarian towns again for at least 300,000 portions of biscuits. Since the initial amounts were not realized, the Grand Armée was forced to confiscate food from various towns. For example, the French

[48] For an analytical presentation of the logistical support of the major formations of the Grand Armée see: Smith, *Armies*, p. 99-154.

confiscated 85,000 portions of bread, 24,000 livres of salt, 6,000 sacks of oat, 3,600 bushels of hey, 5,000 pints of wine, 800 bushels of straw, and 100 carriages with 4 horses each from Heilbronn with a total population of only 15,000 to 16,000. From Hall (with just 8,000 inhabitants) the French confiscated 60,000 portions of bread and related goods, 35,000 livres of meat (or 75 oxen), 100,000 balls of hey and animal food, 4.000 pints of wine, 150 carriages (50 required 4 horses each), and 200 horses. In addition, there was a problem with the transportation of ammunition. A force of 8,000 men needed 97,000 rounds of ammunition as a general reserve, whereas every infantry soldier had to have 60-80 rounds with him. Every artillery gun had as an initial reserve 147-300 shells. Huge military depots were located in the towns of Danzig, Glockau, Stetitin, Magdeburg and Küstrin on the path to Russia. In those depots by 1 May 1812, there were 761,801 shells stored as well as 806 artillery guns. Smaller depots like the one in the town of Heilbronn near Ulm, could transport to the Grand Armée 75,000-100,000 artillery shells per day. Finally, water and fodder supplies for more than 200,000 animals remained problematic. Yet, the Emperor's Personal Court had rations for 6,000 individuals for 60 day days as well as 650 horses, 50 carriages and 1 mobile hospital.[49] It goes without saying that as the French armies would push deeper and deeper in Russia the supply problem became more and more acute as the transportation of food supplies, fodder and ammunition would be more difficult. In addition, the terrain, the climate changes and the shortages in medicine would make the campaign even more difficult.

Napoleon was aware of the problems. However, he believed that because his striking force was initially superior to the Russian armies the initial advantage would be adequate to paralyze the Russian defence and morale. The Russian forces were just

[49] Additional supplies were confiscated as follows: From the town of Augsburg there were confiscated another 3,000,000 portions of biscuits, whereas Vienna had to feed 80,000 men for 3 weeks by providing the following supplies: 75,000 livres of bread and bread related products, 25,000 livres of meat, 200,000 livres of oat, 280,000 livres of animal food, and 375 sacs of wine (the last ones per day). In addition, the furnaces of Braunau were ordered to produce 50,000-60,000 portions of biscuits, cakes and bread per day. Despite these confiscations, the overall food supply remained problematic. Evangellos Halatsis, "The opposing forces during the 1812 campaign", in *The Napoleon's Campaign to Russia, Military History, Great Battles series, No. 18* (Periscopio editions, Athens, October 2005), p. 10-25; D.B. Stavropoulos "Napoleon's Campaign to Russia," *Military History, Great Battles series, No. 18* (Periscopio editions, Athens, October 2005), p. 34-73 and especially 37-38; Van Creveld, *Supplying War*, p. 47-74. According to a different source, the total number of horses of the Grand Armée was 310,000. From those the 200,000 were used from the transportation services in carriages and wagons; whereas 110,000 were used by the cavalry. Every horse needed 9 kg of fodder daily; thus the daily requirements were 1,800 tons. See: Glover, *Warfare*, p. 144.

410,000 men with 211,000 front line soldiers. In addition, there were another 45,000 reserve forces and 153,000 guarding the various Russian fortifications. The Russian side also had 910 artillery guns.[50] Thus, the initial blow would be so hard that the Russian side would not have the time to mobilize its full resources and the war would be won quickly. In addition, Napoleon assumed that the logistical problems would be solved via the confiscation policies similar to those of the Italian campaigns. Thus, he believed that his invasion would bring huge quantities of food, fodder, ammunition, clothes, beverages, timber and other kinds of goods into his control.

The reality proved different. The supply requests were colossal. For example, just at the battle of Borodino, 7 September 1812, the French side consumed 2,000,000 bullets and almost 90,000 artillery shells. Some weeks later, on 19 October 1812, the day the French retreated from Moscow, 183,000 livres of powder were used in an attempt to blow the Russian administrative buildings but in spite of the ferocity of the explosions the buildings were not demolished. In addition, the French artillery used more than 100,000 shells against the enemy forces at the battle of Moscow.[51] The colossal need for all types of supplies could not be met by a transportation force which had its main depots hundreds or thousands of km away and a very poor transportation system. In addition, the scorched earth policy made the life of the French even more difficult.

However, there were cases where the French captured the Russian depots intact and benefited from huge quantities of supplies. For example, on September 14th 1812 the French found in the main armaments factory of Moscow the following: 150 field guns, 60,000 rifles, 1,600,000 rounds of ammunition, 400 tons of powder. Huge quantities of food supplies (potatoes, vegetables, wheat, beverages) were also found.[52] In another case in the depots of the Russian town of Vilna on 10 December 1812, the French found the following supplies: 4,000,000 portions of biscuits, 30,000 pairs of boots, 27,000 rifles, wheat and cakes which could supply a force of 100,000 men for a 40 day period, and adequate meat which could cover the needs of 36 days. However, the French soldiers were so weak that they could not re-load these quantities from the depots to the

[50] Halatsis, *Opposing Forces*, p. 10-25; Smith, *Decline and Fall*, p. 138.
[51] Summerville, *Napoleon's Expedition*, p. 123 and 287, footnote 11; Adkin, *Waterloo*, p. 290.
[52] G. Zouridis, "The fire of Moscow", in *The Napoleon's Campaign to Russia, Military History, Great Battles series, No. 18* (Periscopio editions, Athens, October 2005), p. 74-81.

carriages; as a result the bulk of these supplies was recaptured by the Russians.[53] The total French losses (with their allies) were 552,000 men, 1,252 guns and 164,000 horses.[54] Other sources refer that the losses of the French and their allies were 500,000 men with 150,000 horses.[55] Kennedy (1988) provides the estimates of 270,000 dead, 200,000 prisoners, 1,000 artillery guns lost and 200,000 horses.[56]

The final European campaign 1813-1814

After the failure of the Russian campaign, Napoleon faced a new Coalition of Prussia, Russia and Britain assisted by Sweden and Austria. In spite of the defeat and of the enormous size of the anti-French Coalition, Napoleon reorganized his forces. Thus, in December 1812, he had 40,000 men at his disposal but by January 1813 he was training a force of 250,000 men. The army's strength was further increased by 40,000 gunners from the Navy and from various naval fortifications and ports, 16,000 men from Spain and another 80,000 men from the French National Guard who entered the field army. Even the Imperial Stables were raided to provide for the cavalry and other transportation needs, reducing the number of Imperial carriages from 72 to just 10 and the 500 horses and mules to just 110.[57] By mid April 1813, the French army in central Europe had 200,000 front line soldiers with 450 guns.[58] However, the cavalry formations were problematic. At the beginning of 1813, France could provide only 29,000 horses to the army and many of them "were not in a state to enter military service immediately…[thus] many thousands of French cavalrymen remained without horses in the spring of 1813 campaign, and lack of cavalry very seriously undermined Napoleon's operations."[59] In order to supply this force, consumer goods were again confiscated. Thus, the French confiscated 1,100 tons of rice from Hamburg and another

[53] Summerville, *Napoleon's Expedition*, p. 237 and 301, footnote 10.
[54] Smith, *Armies*, p. 32.
[55] Stavropoulos, *Napoleon's Campaign*, p. 34-73 and especially p. 72.
[56] Paul Kennedy, *The Rise and Fall of the Great Powers Economic Change and Military Conflict from 1500 to 2000* (Fontana Press, 1988), p. 176.
[57] Asprey, *Rise and Fall*, p. 282-284; Glover, *Warfare*, p. 146-147.
[58] Asprey, *Rise and Fall*, p. 291.
[59] Dominic Lieven, *Russia against Napoleon The Battle for Europe, 1807 to 1814* (Allen Lane, 2009), p. 306-307. In those pages, an excellent description of the Napoleonic mobilization of the December 1812-April 1813 is made.

5,500 tons of rice and oat were confiscated from the town of Magdeburg. The French confiscated 2,200 tons of flour from Erfurt. The French allocated 1,000 of manually operated mills per battalion for bread production (its mill could produce 200 bread portions daily); however, in spite of these confiscations and the French food production, the demand was still higher. On 23 September 1813, the daily ration per soldier was just 8 ounces of bread, 8 ounces of meat and 3 ounces of rice. Napoleon was aware that the food supply was problematic and that there was also a shortage of uniforms and boots.[60] During September 1813, the losses on both sides were staggering. The French lost 100,000 men and more than 200 guns; whereas the allies lost more than 85,000 men and 50 guns.[61]

On the morning of 16 October 1813, the greatest battle of the Napoleonic wars took place. In Leipzig, during the "Battle of the Nations," the French deployed almost 190,000 men with 690 artillery guns, however the actively engagement force was just 160,000 men with 630 guns. The allied side deployed 300,000 men and 1,360 guns.[62] On the first day of the battle the French artillery used 80,000 shells against the allied positions. By 19 October, the French had used 220,000 shells and the French reserves were down to just 16,000 shells, allowing only two more hours of fighting! The closest supply depots of the French army were situated in Magdeburg and Erfurt, a rather long distance away. The allied losses were 61,000 men, but the French had lost 70,000-80,000 men, 325 artillery guns and 900 ammunition carriages.[63] Napoleon retreated.

This new defeat, a year after the end of the Russian campaign, was an immense blow to the French. Napoleon still had a considerable force of 100,000 infantry, 30.000 cavalry with 400-500 guns with a reserve of 100,000 artillery shells, instantly available. At the beginning of November 1813, Napoleon planned a new force of 300,000 men and

[60] Asprey, *Rise and*, p. 308-310 and 327.
[61] Lieven, *Russia against Napoleon*, p. 425.
[62] Pantelis Karikas, *Napoleon: The rise and fall of the Eagle of France*, *War Monograph Series No.2*, (Athens: Periscopio editions, 1999), p. 114-116.
[63] Asprey, *Rise and Fall*, p. 329-330; Smith, *Napoleonic Wars*, p. 466; Smith, *Decline and Fall*, p. 168; Pantelis Karikas, *Napoleon*, p. 116. According to a different source, allied casualties were just 52,000 and from those the 22,000 were Russians, and the French lost only 300 guns. See also Lieven, *Russia against Napoleon*, p. 441-459 especially page 458. According to this source, Napoleon lost the battle because there were not many bridges over the Rhine in order to re-supply the French armies with food and ammunition. See also: Adkin, *Waterloo*, page 290.

the French Treasury paid the sum of 2,000,000 francs to the weapon manufacturers for new weaponry. An additional 30,000 rifles per month and the repair of another 90,000 rifles cost the French 1,000,000 francs. In addition, 2,000 uniforms were produced per day; whereas 1,000 new carts and wagons were produced, as well as hundreds of carriages in order to be used as mobile hospitals.[64]

The chaotic situation of the first few months of 1814 is well captured by Houssaye who points out that:

> [At the beginning of 1814] …the blockade of the Continent pressed heavily on the country, the fields were uncultivated, the factories closed and business and public works were at a standstill…collection of taxes …was …everywhere at a standstill. …On the 4th [of February 1814] the news of the defeat at La Rothiere …caused general consternation. Stocks fell to 47.75; the rates of exchange rose to 40 and 50 per thousand for silver and to 90 and 100 for gold, while many money changers refused to give gold at any price. People crowded to the bank to change their notes, but by the Decree of January 18 no more than 500,000 francs could be changed per day.[65]

The same source points out that the French cities had to face the burden of supplying the victorious allies with immense quantities of foodstuff and various consumer goods. For example:

> Vieq with a population of scarcely 1,000 had to supply to the Russians in one week, 560,000 lb. of bread, 280,000 lb. of meat, 360 bottles of wine or brandy, 40,000 lb. of potatoes, forage and oats …650 cords of dry wood and 500 lb. of candles…throughout all the occupied territory it was the same: Troyes was taxed…to the tune of 150,000 francs in silver, 18,000 cwt. Of flour, 12,000 bottles of wine, 3,000 bottles of brandy, 1,000 oxen, 18,000 cwt. of hay, and 344,000 rations of oats;…in.. Aisne the enemy took 6,000 horses, 7,000 horned cattle, and 40,000 sheep.[66]

It was obvious that as the allies were advancing in France, the French were experiencing the same treatment as they had enforced on the other Europeans in previous years.

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[64] Asprey, *Rise and Fall*, p. 333 and 336.

[65] Henry Houssaye, *Napoleon and the campaign of 1814* (London: Hugh Rees Ltd., 1914), p. 2, 29-30.

[66] Houssaye, *Napoleon*, p. 38. See also previous page 37 for additional information for more towns.

The French army was still short of ammunition, medical supplies, men, horses and other materials. For example, in January 1814 Paris had no fortifications. On 15 March, the authorities realised that in order to build a defence wall in the city the sum of 100,000 francs was requested and the defence committee suggested a new tax aiming to gather 500,000 francs. The money would not cover only the cost of the fortifications. For example, on March 16th the National Guard in Paris had a total strength of just 11,500 men of whom 3,000 were armed only with pikes. The clothing and equipment of each man cost 157 francs and the armament 100 francs. At the beginning of February, there were just 11,000 muskets in Paris and another 30,000 in the Fort of Vincennes that were unfit for use. This forced the French authorities to ask the factory of Charleville to repair them. There was a great need for artillery as well. The Fort of Vincennes sent 342 guns to Paris (from a grand total of 700). On 23 March 1814, the French army outside Paris had 100 artillery-ammunition wagons, 80 wagons with 200,000 rations of bread, brandy and baggage. All these preparations, however, could not stop the advancing allied armies.[67] On 11 April 1814, Napoleon resigned and on 28 April he was exiled to the island of Elba.

Fiscal and Monetary policy (1799-1814)

The French defeat was in part the outcome of military blunders at strategic and tactical level; the economy also played a major role in the defeat. The French Revolution and the subsequent military campaigns created a chaotic financial situation for the Treasury. In the 1799 fiscal year, a huge deficit of 250 million francs was created, equal to one third of total French public expenditures, and the state surplus for that year was just 167,000 francs.[68] Under these circumstances, the French government bonds were not considered a safe investment, forcing the French Treasury to offer *monthly* rates of 3%-4%, whereas the market price exceeded the amount of 11 francs. This made the cost of borrowing extremely high and difficult. In order to face the situation, on 18

[67] Ibid., p. 302, 340-348.

[68] The deficit occurred although the Revolutionary government imposed taxes of 15,297,000,000 francs from those the 7,550,000,000 were emissions of Assignats, 2,422,000,000 were emissions of Mandats, 2,000,000,000 were forced loans from the rich and 3,325,000,000 were state revenues from the sale of National Domains belonging to the Clergy and the nobles. See: Parsons, *Historical Papers* p. 43.

January 1800, Napoleon established the "Bank of France" capitalized at 30 million francs and set as a maximum dividend for the shareholders the 6% of the Bank's profits. The main task of the central bank was to be able to make privileged state loans (i.e. long term loans with low interest rates) and control money supply. In addition, Napoleon introduced a modern tax system imposing direct and indirect taxes and modernising the tax authorities, sold state land to private investors, re-paid old loans with the issue of new bonds with a fixed interest rate, reduced public expenditures and imposed a fixed exchange rate between the franc and the silver.[69]

Thanks to these new economic measures, France was able to increase public expenditure from 700 million francs in 1806, to 955 million in 1811, to 1.3 billion in 1812 and to 1.15 billion in 1813.[70] Almost 50% of these increases were in defence spending. Thus, defence spending increased from 462 million francs in 1807 to 817 million by 1813. The high defence spending was not the only important aspect of public finance. Huge state spending went to the private sector as payments for various goods and services in order to sustain a full employment status in the economy. Thus, in 1806 alone, the first year of this policy doctrine, 3 million francs were invested for this purpose. In 1807 another 6 million francs were invested. For the 1806-1814 period, public finance towards private industries was 18 million francs. However, during the same period, tax revenues were reduced and the internal French debt increased by 1.27 billion francs. Money supply was increased, triggering inflation. According to one source, the money supply in circulation increased from 34 million francs in 1804 to 87 million in April 1805 and to 111 million by 1812.[71] As well, confiscations from the occupied territories occurred but failed to cover the needs. Until 1810, France extracted the following sums from European states:

1. By 1804, it had extracted 229,127,901 Dutch guilders as war contribution (from those the 74,065,814 were used by the French army in order to finance operating / current costs) from Holland

[69] Weider & Gueguen, *Napoleon*, p. 77; Chandler, *Dictionary*, p. 93. The established exchange rate between the franc and the livre was 1 franc=1 livre and 3 dinars (1.0125 livres)=one twenty-fifth (1/25) of the British sterling. See: Harvey *Collision of Empires*, p. 69, footnote 54.
[70] Weider Gueguen, *Napoleon*, p. 78-79.
[71] Harvey, *Collision of Empires*, p. 69, footnote 54.

2. After the battle of Austerlitz (1805) France extracted 75 million francs from Austria and from that 27 million covered the operating / current costs of French occupation army. The rest, 48 million, was directed to French State Treasury. According to one source, the Austrian payments were made in specie and triggered a:

> very severe monetary crisis which had in the autumn of 1805, caused widespread failures and disasters in France…the difficulty was that the treasury had to pay every twelve months 120,000,000 francs more than it received, because of the delay of all payments of taxes. To liquidate part of this debt 60,000,000 was funded in the five per cents [bonds]; the capital of the Bank of France was increased from 30,000,000 to 60,000,000 francs, and certain interest was offered….[72]

It was obvious that over-supply triggered inflationary pressures. After the battle of Wagram in 1809, France extracted another 164 million francs from Austria. 76 million were used to finance the French army occupation costs and 88 million were given to the French Treasury. In this case, the initial Austrian commitment was for 250 million francs, but the money was never paid in full.

3. After the 1806 battle of Jena, Prussia, Saxony and other German states were forced to pay to France the sum of 470,467,387 francs. The German states provided also immense quantities of goods and materials and, in addition, they supplied 280,000 uniforms, 250,000 pairs of boots and huge numbers of horses to the French. Thus, total German supply aid to France, both pecuniary and non-pecuniary, was 739 million francs. By January 1813, France claimed a war debt of 48 million francs from Prussia but, by that time, Prussia had supplied provisions to the French army valued at 94 million. Prussia demanded money from France and refused to recognise any French claims.

4. During the period between 1805 and 1812, Italy gave 50% of its tax revenues to France.

[72] Parsons, *Historical Papers*, p. 20.

5. The French state had the financial support of the people and of the high classes. For example, the French branch of the Rothschild bankers only in one occasion donated to the French Treasury 255,000 guilders in order to buy horses for the French cavalry.[73] However, overall French expenditure was lower compared to that of Britain. In 1805, the French budget was just 684 million francs (£27,636,363), whereas the British was £76.4 million. In 1813, the French expenditure where 1,150 million francs (£46,464,646); whereas those of Britain were £109.07 million.[74] In spite of the continued exploitation of occupied countries, the French debt increased from 47 million francs in 1809 to 220 million by 1813.[75]

6. By 1814, the fiscal situation was extremely problematic. Although taxes have increased direct taxes in the first quarter of 1814 produced just 33,743,000 francs compared to the 75,500,000 produced in the same period of 1810. Indirect taxation produced the same results. Thus registration fees produced revenues of 13 million francs (as opposed to the planned 25 million goal); the Post Office generated revenues of just 17,000 francs (as opposed to the planned 2,750,000 goal) and on 25 January 1814 at a Cabinet Council it was stated that monthly

[73] Niall Ferguson, *The World's Banker. The History of the House of Rothschild* (Weidenfeld & Nicolson, 1998), p. 74.

[74] Ibid., p. 103; Harvey, *Collision of Empires*, p. 62-63; Glover, *Warfare*, p. 96; Weider & Gueguen, *Napoleon*, p. 79-82. According to Paul Kennedy, *Rise and Fall of the Great Powers*, p. 172, Prussia paid to France after the battle of Jena the sum of 311 million francs which was equal to the half tax revenues of the French budget. If total German financial contribution was 470.4 million francs then the 159.4 million were extracted from Saxony, and the other allied states to France (Duchy of Berg, Duchy of Essen-Darmstadt, Kingdom of Bavaria). According to another source, Prussia paid 120 million francs just to make the French withdraw their occupation forces from its territory. See: D. Gideon, *The diplomatic relations between France-Russia until 1812, Military History, War Monograph Series No. 18* (Athens: Periscopio editions, October 2005), p. 4-9 and especially page 8. See also: Hans-Ulrich Wehler *Deutsche Gessellschaftsgeschichte 1700-1815*, Band I, (Munich: C.H. Beck, Verlag, 1996), p. 435, who points out that France extracted from Prussia the sum of 474 million thaller during the period October 1806-October 1808. During the period October 1808- October 1813, France extracted another 115 million thaler from Prussia (that is 585 million francs) in order to finance some of the costs of the Grand Armée in the 1812 campaign against Russia.

[75] Smith, *Decline and Fall*, p. 73. According to Harvey, *Collision of Empires*, p. 67, the French debt in 1804 was 45,180,624 francs (or £1,825,480) and by April 1814 stood at 63,307,637 francs. For the Prussian debt, see: Oscar Browning, *The Fall of Napoleon* (London, 1907), p. 8.

state revenues were just 367,000 francs as opposed to the 10 million which would have accrued in peace time.[76]

Bardo & White (1990) point out vividly: "After 1797…Albion abandoning the Gold Standard [borrowed] substantially while …France maintained convertibility of the franc and borrowed very little…Britain could continue to borrow a substantial fraction of its war expenditures at what were relatively low interest rates…British tax rates did not vary much…as peacetime surpluses offset wartime deficits…France on the other hand, had squandered her reputation in the last decade of the Ancient Regime and Revolution. Her dependency on taxation did not reflect any superior fiscal virtues but rather the opposite…Borrowing would have been exceedingly costly…"[77]

Trade policy (1800-1814)

The trade policy followed by Napoleon followed has triggered immense debate. To begin with we present the French exports of the 1805-1815 period (Table 1).

[76] Houssaye, *Napoleon*, p. 20.

[77] 1) Niall Ferguson *The World's Banker The History of the House of Rothschild*, (Weidenfeld & Nicolson, 1998), page 103, 2) A. D. Harvey *Collision of Empires Britain in Three World Wars*, (Phoenix, 1994), p 62-63, 3) M. Glover: *Warfare in the Age of Bonaparte*, (Pen & Sword, 2003), p 96, 4) B. Weider & E. Gueguen *Napoleon The Man who Shaped Europe*, (Spellmount, 2004), p. 79-82. According to Paul Kennedy *The Rise and Fall of the Great Powers Economic Change and Military Conflict from 1500 to 2000*, (Fontana Press, 1988), p. 172 Prussia paid to France after the battle of Jena the sum of 311 million francs which was equal to the half tax revenues of the French budget. If total German financial contribution was 470.4 million francs then the 159.4 million were extracted from Saxony, and the other allied states to France (Duchy of Berg, Duchy of Essen-Darmstadt, Kingdom of Bavaria). According to another source Prussia paid 120million francs just to make the French withdraw their occupation forces from its territory. See: D. Gideon: *The diplomatic relations between France-Russia until 1812*, Military History, War Monograph Series No. 18, Periscopio editions, Athens, October 2005, p. 4-9 and especially p. 8. See also: Hans-Ulrich Wehler: *Deutsche Gessellschaftsgeschichte 1700-1815*, Band I, C.H. Beck, Verlag, Munich, 1996, p. 435, who points out that France extracted from Prussia the sum of 474 million thaller during the period October 1806-October 1808. During the period October 1808- October 1813, France extracted another 115 million thaler from Prussia (that is 585 million francs) in order to finance some of the costs of the Grand Armée in the 1812 campaign against Russia

TABLE 1: EVOLUTION OF FRENCH EXPORTS (in million francs)

	1805-1806	1807	1808	1809	1810	1811	1812	1813	1814	1815
Confederation of the Rhine	126.1	99.4	115.6	115.6	143.3	110.5	111.03	72.5	65.3	81.1
Spain	65.3	65.6	33.02	33.9	38.3	40.4	38.1	22.1	61.7	54.3
Holland	56.5	45.1	80.2	66.6	44.5	16.4	(α)	(α)	53.5	64.6
Kingdom of Italy	40.05	40.6	44.3	43.8	51.6	52.5	56.9	47.9	30.6	20.4
USA	45.9	43.1	1.8	1.3	4.4	14.6	24.7	31.6	4.4	56.1
Switzerland	26.6	23.5	23.3	18.8	21.2	20.7	16.8	22.8	27.1	26.8
Denmark	30.8	35.5	2.6	28.3	0.79	9.4	30.1	9.3	1.4	3.3
Rest of Italy *	20.1	17.1	11.6	14.7	20.5	20.3	31.2	16.2	16	35.2
Hanseatic towns	24.1	3.3	5.7	3.7	1.9	3.1	24.5	9.5	4.9	3.1
Ottoman Empire **	5.8	2.4	3.9	6.6	5.3	6	3.9	5.6	3.1	4.4
Prussia	10.7	1.2	1.1	2	0.72	1.1	2.1	0.85	2	10.5
Portugal	9.2	6.9	0.091	-	-	-	-	-	10,5	10,8
Russia	1.5	0.38	0.80	4	0.8	0.2	0.14	-	4.6	4.1
Austria	1.4	0.5	0.59	0.78	3.4	1.89	1.1	0.28	1.8	0.67
G. Britain	-	-	-	-	38.9	29.9	76.9	114.6	53.3	38.6
Total	**464.5**	**385.08**	**325.1**	**340.5**	**376.1**	**327,5**	**418.05**	**353.6**	**340.8**	**414.7**

Source: Digby Smith, *The Decline and Fall of Napoleon's Empire* Greenhill Books, 2005, pages 218-219. (α)=the exports of the specific years incorporate the exports to the Hanseatic towns, (*)=The rest of Italy refers to Naples, Rome, Sardinia and some other small towns as well as Erturia until 1809. (**)=The Ottoman Empire incorporates the Middle East as well.[78]

Table 1 demonstrates that, although the French trade policy goal was the increase of exports, these fluctuated immensely during the 1805-1815 period. Thus, from 1807 to 1815, annual exports were lower compared to the year 1805-1806. In addition,

[78] Here we have to point out that other sources provide different data. To illustrate, the most official source of historical statistics B.R. Mitchell, *International Historical Statistics Europe 1750-2000* (Palgrave, 2003), p. 571 provides the following figures of French exports and imports (the latter are in brackets) : 1799: 300 (253), 1800: 272 (323), 1801: 305 (415), 1802: 325 (465), 1803: 347 (430), 1804:380 (441), 1805: 375 (492), 1806: 456 (477), 1807: 376 (393), 1808: 331 (320), 1809: 332 (288), 1810: 366 (339), 1811: 328 (299), 1812: 419 (308), 1813: 354 (251), 1814: 346 (239), 1815: 422 (199). Although the work of Mitchell (2003) is regarded as the most important in the international economic history bibliography I use the data of Smith (2005) because they provide a geographical segmentation of French exports.

France's main trading partner was the Confederacy of the Rhine. Thus, French perfumes, wine, textiles, silk were all exported *en mass* into the main German trade centres of Frankfurt and Leipzig. However, as time passed, trade links between France and the Confederation of the Rhine decreased. For example, in 1805-1806, the Confederation absorbed 27.14% of French exports, but by 1813, it absorbed only 20.5%, and in 1814 it decreased to 19.1%. It recovered slightly in in 1815 to 19.55% of French exports. The loss of Prussian and Spanish markets during the wars had immense economic ramifications for the French exporters. The Prussian market absorbed 2.30% of French exports in 1805-1806 but by 1813 it had decreased to just 0.24%. In the case of the Spanish market, the figures were 14.05% in 1805-1806, in 1813, it had declined to 6.25%. By 1815, it slightly improved to 13.09%. Finally, the trade volumes with the Hanseatic towns were also almost destroyed thus in 1805-1806 the 5.1% of French exports was absorbed however by 1805-1806, it was down to just 0.5% and in 1815 it rose slightly to 0.74%.[79] Thus French export strategy did not materialised.

The second goal of French trade policy during this period was the disruption of British trade. In 1793, France terminated all imports from Britain and the British responded by imposing a naval trade embargo. The main rationale behind this trade war was mercantilism. The main purpose of trade was the export of goods in order to bring gold for payment and thus increase state gold reserves. Thus, the enemy's exports had to be reduced so that their gold revenues would decrease. This would force the enemy to use their existing gold reserves, exhausting their ability to finance the war effort and ending the war. Thus, trade war was associated with exports not imports. However, for humanitarian reasons, food imports would be accepted and were the only source for increasing the gold supply. In 1810, when Napoleon exported immense quantities of cereals to Britain, covering almost 13% of British needs, he did it in order to get the gold payments and to reduce the British ability to finance the war. However, this rationale failed to take into consideration the British ability to finance the war via bank loans. In addition, adequate food supplies actually allowed Britain to continue the war effort.

[79] In the case of Hamburg, the main port of the Hanseatic towns the number of commercial ships in ports were reduced as follows: 1801: 279 ships, 1806: 248 ships, 1812: 145 ships. See: Harvey *Collision of Empires*, p. 61.

In December 1800, the initial trade war between Britain and France forced other European states to seek an alliance in order to protect their trade interests. Prussia, Russia, Sweden and Denmark signed a trade treaty which gave priority to the exchange of goods between them. Britain reacted by reducing its trade volume with these states, except Prussia, and eventually, British military action against Copenhagen terminated the trade agreement of these states in 1801. In addition, the US Navy benefited from the European crisis as US commercial ships were used to transport goods from the French colonies to France. Thus, US commercial ships increased from 558,000 tons in 1802 to 981,000 tons in 1810.[80] The initial bilateral French-British trade war became more severe as Napoleon re-enforced France diplomatic position across Europe. In November 1806, Napoleon issued the "Berlin Decree," under which the British isles were subjected to constant naval blockade. Thus, trade with Britain was prohibited not only for France but also for those states allied with France, including Spain, Holland and Naples.[81] In 1807, Russia and Prussia were also included in the Continental System, but according to one source "on August 26 [1807] at a session of the Council of Ministers, the Minister of Marine (=Navy) secured from Napoleon a secret decision favourable to Denmark, tacitly exempting it in a large measure from the Berlin Decree".[82] It was the first obvious sign that the trade policy could not function in the end. However, in 1810, three more countries joined (Denmark, Norway and Sweden). The results from the trade blockade against Britain were not the anticipated ones and actually the trade war damaged the French economy as well. The French-British trade did not collapse. Rather, the exporters were able to send their products to Britain under a special license. This was known as "trade by exception policy." According to one source:

> The first important summary of licence trade results …shows that [until June 1810] 354 licences had been signed, of which 351 had been delivered. Although returns were incomplete, wine grain and other articles valued at over 10,000,000 francs had been exported, and medicines and raw materials worth some 6,000,000 francs had been imported. For 1809, total exports were 340,605,400 francs and total imports [were] 357,803,500 francs …Aggregate figures for British-French trade up to 25/11/1811

[80] Harvey, *Collision of Empires*, p. 61.
[81] The complete provisions of the Berlin Decree can be found in Frank Edgar Melvin, *Napoleon's Navigation System. A study of trade control during the Continental Blockade* (University of Pennsylvania, Ph.D. Thesis 1919), p 7-9.
[82] Ibid., p. 29.

> provide the figure of 27,740,134 francs of exports to Britain and 29,144,351 francs of imports from Britain giving a difference of 1,404,217 against France…Accurate statistics regarding the extent of trade of 1812…are not available…the records …show that Napoleon signed 799 licences and permits during the period, of which 310 were never delivered …and …of the licences actually delivered a large percentage remain unused. …during the same period the Board of Trade had 11,181 applications for licences of which perhaps a fourth were refused …but the actual number of licences granted would run about 20,000 for the year. [these figures may be compared with 14,965 applications for 1810, 9,862 for 1811, 5,611 for 1813 and 2,492 for 1814].[83]

It was obvious that bilateral French-British trade was never completely interrupted during the Years of Continental Blockade.

The French tariff revenues were reduced from 60,622,189 francs in 1807 to 11,552,152 francs in 1809. In addition, the French ship-owners were forced to reduce their investments in ship construction due to the lower trade volume. At the end of 1809, Napoleon ordered the confiscation of all shiploads from US ships destined for European ports. He justified his actions with the assertion that the US had trade links not only with France and its allies but with Britain as well. By July 1810, the French authorities had confiscated US goods valued at 10 million francs the port of Antwerp alone. Additional US goods valued at 12 million francs were confiscated from other Dutch ports. another 8 million of US goods were confiscated from US ships in Spain. Finally, confiscated goods valued at 15 million francs were taken from other European ports. In order to avoid any US reaction Napoleon claimed that the confiscations targeted Britain and potential smugglers and assured the US government that France supported US territorial expansion towards Florida and other parts of America. However, secret negotiations were taking place between France and Britain at the same time aiming to lift the trade war! The first round of talks, of which Napoleon was aware, occurred with the intervention of King Louis of Holland who acted as an intermediary between France and Britain. The Dutch king used the Dutch banker Labouchere in order to influence the British side. A second round of talks, of which Napoleon was unaware, occurred between the French Minister of Police, Josef Fousse,

[83] Ibid., p. 133-134, 136 and 330-331 see also footnote 63 on page 331.

and the British Foreign Minister, Marquis Wellesley. However, both attempts failed. The System of Continental Blockade was at a pivotal point between October andDecember 1810. The French had been aware of Russian intentions and of the smuggling of goods in the North Sea for a long time. In October 1810, in a letter to Czar Alexander of Russia, Napoleon pointed out that:

> English finances were in dire straits with many business houses going bankrupt. The factories are shut down the warehouses crammed. In Frankfurt and Switzerland I have just seized immense quantities of English and colonial merchandise...Six hundred English merchant ships sailing in the Baltic have been refused entry in Mecklenburg... and are sailing to Russia. If your Majesty admits them, the war will continue; if he seizes them and their cargoes ...he will strike a severe counterblow [to Britain]...It is up to your Majesty to have peace or to let the war continue…[84]

In November, the Russian ambassador to France, Prince Kourakine, received two important pieces of information from St. Petersburg. The first revealed that just in the market of Leipzig alone 700 wagons of British imperial products were transported and sold via Russia. The second piece of information revealed that 1,200 commercial British ships had entered the Russian ports under Swedish, Spanish, Portuguese or US flags. These pieces of information were intercepted by the French secret services and passed to Napoleon. In addition, the Russian Ministry of Finance imposed tariffs on imported French products, the notorious Ukase tariff regime, aiming to recover at least part of the 100 million roubles of losses from the trade war; Thus, the bilateral relations were no longer cordial. On 31 December 1810, Russia announced that it was abandoning the Continental Blockade. Napoleon immediately decided to organize an attack.[85] As Kyriazis points out:

[84] Asprey, *Rise and Fall*, p. 209-210.

[85] Ronald Findlay & Kevin H. O' Rourke, *Power and Plenty Trade, War and the World Economy in the Second Millennium* (Princeton University Press, 2007), p. 366-369; Harvey, *Collision of Empires*, p. 59; Asprey, *Rise and Fall*, p. 200-212 and 227. The letter of Napoleon to Czar Alexander can be found on pages 209-210; Chandler *Dictionary*, p. 453. Contrary to the mercantilist policy of the Napoleonic wars when in the two world wars Germany launched the submarine warfare campaign against Britain the objective was the imported raw materials, food and other goods aiming to crush Britain via the shortage of food, fuels and other raw materials.

> Britain ...had the control of global trade. Even without Europe there were still the US, Canada, ...Central and South America...from those regions, even if the European governments wanted, the British ships could not be excluded, without a fleet deployed in those waters. There were the coats of Africa, the Ottoman Empire, and of course India, China and the whole of Asia. Conclusion: Even without Europe, Britain could survive, even with some loss of economic prosperity. The question was if the European countries could and wanted to suffer economic losses for the shake of Bonaparte. The Continental Blockade meant that Europe had to survive without the precious spices (pepper, nutmeg, carnation, sandalwood) essential as natural preservatives; whereas many associated them with treatments of illnesses, the sugar from Antilles, the coffee, the chocolate, the embroideries and the tea from Indies and Ceylon, the porcelain and the silk from China, the special timber from the tropical, the ivory, the oil of whales and many other goods, the cotton from the USA. In addition the poorer classes had to survive without the rich fisheries of the North Sea, such as herring and sardines who ware a basic food...the good and cheap "industrial" products of England- textiles and metallurgy- products. The export embargo however had a harmful effect on the economies of certain states such as Russia, who dominated South Baltic and Poland, and exported cereals, timber and fairs to Britain and via British ships to many other European states; importing the goods which the Russian high classes needed…such as tea, porcelains, coffee, chocolate, sugar, Sheffield silver, and spices.[86]

Economic and military mobilization of France's allies (1800-1814).

The French dominance across Europe forced many states to help the French military effort whether they wanted to or not. The forced assistance by Prussia and

[86] Nickos Kyriazis, "The Importance of Sea Power Part A,'" *History* 446 (August 2005): p. 42-51 and especially p. 50-51. According to Smith, *Decline and Fall*, p. 70, the British exports to Europe in spite of the Continental Blockade during the year 1807-1808 were at £9 million roughly equal to previous years. In 1814 when Napoleon abdicated the British exports to continental Europe reached the level of £28 million (to this amount goods from British colonies were included).

Austria has already been described; thus at this section we shall discuss the role of Holland and other small German states.

The French-Dutch treaty of 1795 decreed that a French force of 25,000 men would be deployed in Holland and the expenses for maintaining this force would be paid by the Dutch. In addition, Holland had to offer to the French Navy 25 warships of the line with their crew (the cost of the ships and their crew was 6-7 million guilders) and additional economic aid to France of 100 million francs. The Dutch army troops were forced to fight with the French, which would cost roughly another 9 million guilders. In December 1803, the overall Dutch contribution to the French war effort was as follows: 26.000 men, 30 ships of the line and frigates with their crews, 100 small warships, 250 transport ships with the ability to transport 60-80 men each. In addition, the country was paying for 18,000-20,000 French soldiers. At this point in time, Holland had the highest debt in Europe at around 766 million guilders, 10.5 times higher from the French and 13 times higher from the British. In addition, this debt was 26 times higher from the annual tax revenues of the state (Tables 2 and 3). In spite of fiscal constraints, the defence expenditure especially that related to the Navy increased immensely. The public debt increased from 160% of GNP in 1795 to 341% of GNP in 1815.

TABLE 2: FISCAL EVOLUTION IN HOLLAND 1798-1810 (in million guilders)

Year	Government expenditure	Tax revenues	Interest payments	Deficit
1798	63.50	25.60	36.20	38,00
1799	84.60	33.80	29.30	50,80
1800	78.0	33.80	34.30	44,20
1801	72.70	33.80	32.70	38,90
1802	66.0	33.80	32.90	32,20
1803	73.5	35.00	33.90	38,50
1804	72.9	35.00	35.00	37,90
1805	72.2	35.00	33.90	37,20
1806	82.0	42.70	34.30	39,30
1807	78.1	46.60	34.80	31,50
1808	80.0	44.00	38.80	36,00
1809	70.0	48.30	38.90	21,70
1810	74.0	42.80	41.50	31,20
Total	**967.50**	**490.20**	**456.50**	**477.40**

Source: Victor Enthoven, "Total War-Total Bust-the cost of war in the Batavian Republic 1795-1810", in *The Total War The Total Defence 1789-2000*, ed. Swedish Commission of Military History, Stockholm 2001, pp. 310-327 and especially p. 319.

TABLE 3: EVOLUTION OF DEBT IN HOLLAND 1798-1815 (in million guilders)

Year	National debt	Interest rate	Debt / GNP (%)
1795	766	22.7	160
1800	975	34.3	204
1805	1,145	33.9	240
1810	1,232	41.5	258
1815	1,726	14.7	341

Source: Victor Enthoven, "Total War-Total Bust-the cost of war in the Batavian Republic 1795-1810", in *The Total War, The Total Defence 1789-2000*, ed. Swedish Commission of Military History, Stockholm 2001, pp. 310-327 and especially p. 319.

TABLE 4: EVOLUTION OF FISCAL EXPENDITURE IN HOLLAND 1799-1806 (in million guilders)

	1799	1800	1801	1802	1803	1804	1805	1806	Total
Military Expenditure									
Navy	12,847,830	9,408,250	10,320,251	6,592,948	4,298,272	7,296,175	12,748,616	16,787,793	80,300,135
Army	19,539,040	24,795,573	21,988,463	12,545,278	8,670,823	18,733,987	18,983,898	19,141,638	144,398,700
Total	32,386,870	34,203,823	32,308,714	19,138,226	12,969,095	26,030,162	31,732,514	35,929,431	224,698,835
Other	36,267,416	43,790,061	39,044,605	46,854,343	40,503,925	43,753,241	37,339,047	41,356,414	328,909,052
General Total	68,654,286	77,993,884	71,353,319	65,992,569	53,473,020	69,783,403	69,071,561	77,285,845	553,607,887

Source: Victor Enthoven, "Total War-Total Bust-the cost of war in the Batavian Republic 1795-1810", in *The Total War, The Total Defence 1789-2000*, ed. Swedish Commission of Military History, Stockholm 2001, pp. 310-327 and especially p. 327.

Table 4 depicts the defence spending between 1799 and 1806. The defence expenditure was 41% of the overall government spending; whereas the civil expenditure was 59% of the aggregate total. Turning to defence, 26% of expenditures were directed to the Army and 15% to the Navy. The Dutch was not the only contribution to the French war effort. For a limited time-period, a number of German states and principalities assisted the French. The contribution of those states is presented in Table 5.

TABLE 5: MILITARY CONTRIBUTION OF FRANCE ALLIED STATES

State	Period of contribution	Contribution
Grand Duchy of Baden	1805-1815	In 1796 payment of 2 m. livres to France. Total of 5,220 infantry and 3,400 cavalry with 6 guns and 2 howitzers
Grand Duchy of Warsaw	1807-1813	133,460 infantry and 31,118 cavalry
Grand Duchy of Berg	1806-1813	25,970 infantry and 4,000 cavalry with 14 guns
Duchy of Essen-Darmstadt	1805-1815	17,792 infantry and 840 cavalry with 6 guns
Confederation of the Rhine	1806-1815	5,000+ infantry
Kingdom of Saxony	1806-1815	83,270 infantry and 19,528 cavalry for the years 1806, 1809, 1810.
Kingdom of Westphalia	1807-1813	57,126 infantry and 7,495 cavalry for the years 1809, 1812, 1813.
Kingdom of Württemberg	1805-1815	12,000+
Kingdom of Denmark	1804-1813	56,100 infantry and 6,874 cavalry
Kingdom of Italy	1804-1814	55,795 infantry and 8,064 cavalry
Kingdom of Naples	1804-1815	Around 150,300 infantry and auxiliary troops
Kingdom of Spain		Small number of men
Kingdom of Bavaria	1803-1815	Around 11,000 men (the 600 of them were cavalry)

Source: Michael Oliver & Richard Partridge, *Napoleonic Army Handbook: The French Army and Her Allies* (London, Constable: 2002), pp. 139-336. This source provides a detailed analysis of the various military formations. Some formations reflect the theoretical strengths and not the actual battle front strengths. In addition, there are formations without numerical strength. Finally, there were cases where various small or large formations refused to receive orders from the French military command, or even rebelled during battles. Thus, the above data can be regarded as the best possible estimates, and not necessarily the most accurate data. Finally, the artillery data are not complete as well.

The Economic and Military Mobilization of the 100 Days (February-June 1815) and the End: The Exile to St. Helena (1815-1821)

The role of the economy was crucial to the final defeat of Napoleon. The Emperor returned to its throne in March 1815. At that time, the economic and military might of France was greatly reduced. The budget of 1814 indicated expected total tax revenues of 298 million francs and the French army had a total strength of just 224,000 men (the 170,000 infantry, with just 35,629 horses for both cavalry and artillery). However, the actual number of horses was much lower since the farmers were able to provide only 5,000 new horses to the army and those which already existed were old and battle worn. In March 1815, the French Treasury had just 50,000,000 francs; a sum which could finance the establishment of only one Army Corps, which needed at least 40,000,000 francs. In addition to the 50 million from the Treasury, the army had just 670,000 francs in its own war chest. The National Guard requested 24,000,000 francs and the monthly expenditure for the logistical support of an army of 128,000 men was 5,000,000 francs. The total monthly war expenditure was calculated at the staggering level of 70,000,000 francs. Under these financial constraints, any attempt to increase the army strength seemed impossible.

Napoleon managed to overcome the difficulties with an immense economic mobilization. First, he requested the increase of government revenues from 298 million to 400 million francs. In order to achieve this goal, the Treasury issued bonds worth of 150 million francs. An additional sum of 80 million was to come from the sale of state properties, 300 million was to come from the sale of forests and wood, 60 million from new war taxes, and other 40 million from other sources. Thus, the Treasury expected total revenues of 630 million francs, surpassing Napoleon's demands. In addition, a savings in government spending would realize another 50-70 million francs, practically the entire French naval budget. Napoleon decided to make the navy immobile by transferring men, guns, ammunition and money to the army. Thus, total available revenues were between 680 and 700 million francs. The immense increase of revenues were associated with an immense industrial mobilization. French gunsmiths could produce just 3,000 rifles per day and 6,000,000 cartridges per month despite the fact that 240,000 rifles were required immediately. In addition, 1,250 uniforms were produced daily in Paris and across northern France. All the old military hardware that existed across various castles, fortifications, barracks and depots was reused. Across France,

there were 13,947 artillery guns of all calibers. The fort of Marseilles had only 500,000 rounds of ammunition and 100,000 kg of gunpowder. Across France, there were 195,000 muskets and rifles. However, 74,000 rifles needed repair. According to the plan, every soldier should have 100 rounds of ammunition. However, only 50 rounds were available by June 1815. Finally, logistical support began to increase. Under the old system, an army of 100,000 men with 20,000 horses stationed in northern France was maintained. Napoleon asked for logistical support of an army of 250,000 men with 40,000 horses for a period of six months. By June 1815, , just three months after the arrival of Napoleon, the strength of the French army increased from 224,000 men to 662,331 men, including the National Guard is included.[87]

The French force was almost equal to the total allied force of 750,000 men that was mobilized against it: 300,000 Austrians, 236,000 Prussians, 150,000 men from other German states, 225,000 Russians, and 106,000 Dutch, Belgian, British and Germans under the command of Wellington. However, the total number of allied and French armies never saw action. At Waterloo, the Napoleonic vision of French dominance across Europe was extinguished by allied forces. In addition, any naval blockade of Europe enforced by the British Navy would again put the French under immense pressure. In the final battle at Waterloo, the French guns fired 21,000 projectiles - a rather modest number compared to that of previous campaigns.[88]

Concluding Remarks

The French economist Jean-Baptist Say observed that Napoleon's defeat and exile to St. Helena was the result of his ignorance of political economy.[89] Napoleon managed to defeat almost all of France's continental enemies including Austria, Prussia, Russia, and Italy in most engagements. However, his tactical and strategic skills failed to overcome the two major French deficiencies. First, the economic looting of Europe

[87] For the complete data of the 100 days French economic mobilization, See: Oscar Browning, *The Fall of Napoleon* (London, 1907), p. 222-223: D. B. Stavropoulos, *The Military and Economic Mobilization of France during the 100 Days*", in *Waterloo 1815. The battle that decided the faith of Europe, Military History, Great Battles series, No.37* (Athens, Periscopio editions, February 2009), pp. 50-61. See also in the same volume, p. 4-49.
[88] Adkin, *Waterloo*, p. 290.
[89] Weider & Gueguen, *Napoleon*, p. 82.

stressed the Europeans and pushed them to rebel against him. Secondly, there was an immense imbalance in economic power between Britain and France. France may have occupied Europe but Britain had the colonies of America, Canada, Africa, India, and Asia behind it. Britain, based on its international trade, could and did mobilize more economic resources, raw materials, and labour than France. In a prolonged war, Britain could survive much better than France.

There are two essential issues in this discussion. France's economy was inefficient when compared to that of Britain. Although French armaments production was similar to that of Britain in many respects, the French industry could not cope with the demands of prolonged warfare and this forced the Grand Armée to rely heavily on war booty. The second issue is associated with the USA. As O' Rourke (2006:147) pointed out in 1790, there were just 2,000 cotton spindles in the United States however by 1812 the number increased to 93,000 and by 1817 it was 333,000. Thus, the economic foundations of the US industrialization were established during the Napoleonic wars. It was a sign that the Europeans failed to realise by continuing the internal struggle with the wars of 1866-1871 period and of course with the total wars of 1914-1918 and 1939-1945. Napoleon himself before his death pointed out that "two infant giants," Russia and the USA, will in the future dominate global affairs.

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