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Russian versus Soviet Military Mobilization in World Wars I and II: A Reassessment

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Abstract: The paper demolishes an old myth which the Soviet Union created after 1945. The myth is associated with the victory of USSR against Germany and its allies in Europe during the Second World War. According to the Soviet Union, the "Great Patriotic War" of 1941-1945, was won because of Stalin leadership and due to the efficient economic industrial mobilization which the Communist GOSPLAN Central Economic Committee imposed on the economy. The Soviet era argument compares the victory of 1945 with the defeat of capitalist Russia in 1917, and claims that the communist organization of the war economy has been very successful compared to the poor organization of capitalist Russia of 1914-1917 period. The reality is different. The USSR was both heavier industrialized and armed compared to the Empire of the Czar in 1914. However the USSR suffered more defeats, human and material losses as well as catastrophes compared to those of the Russian Empire. And these developments occurred as the country enjoyed greater military and economic aid from the US and Great Britain compared to what was granted to Czarist Russia during 1914-1917. The biggest paradox however is associated with the post-war settlements. The humiliating defeat which the Czarist Empire suffered in World War I -and was sealed with the Treaty of Brest Litovsk signed by Lenin- was never implemented since the Western Allies with the victory of 1918 simply abolished the Treaty. Thus the defeat of 1917 practically did not have a negative outcome. The 1945 victory generated the huge expansion of Soviet sphere of power in Eastern Europe but the cost of victory was so high that the final outcome can be considered as a pyrrhic victory.
Keywords: Defenece, warfare, economic mobilization, Russia, USSR

INTRODUCTION

The intellectual aspiration of the paper is to compare and assess the efficiency of military mobilization of Russia (and USSR) during World Wars I and II. The task seems prima facie futile. One can argue that during World War I Russia suffered an immense military defeat; whereas in World War II it emerged as a great victor, as a master of Eastern Europe, and with its troops inside Berlin. However a more careful assessment has to be made. In the eyes of many (historians, economists, political scientists etc.) the Russian defeat of World War I versus the Soviet victory of World War II is also associated with the different economic systems (capitalism versus central planning) which the country experienced. The current paper however points out that the defeat in World War I was certainly not catastrophic (since the Brest-Litovsk treaty between Russia and Central Powers was perished and never actually implemented by the victorious Western Powers in Versailles); whereas the victory of World War II was pyrrhic. The structure of the paper is as follows: In the first section we analyse the economic transformation of Russian economy and industry before and during World War I and we provide a nexus with the tactical military developments in the war theatres. The second section follows a similar methodology by analyzing the transformation of Soviet economy and industry before and during World War II and again applying a nexus with tactical military developments. The third section, compares and contrasts, the losses of Russia and those of the USSR, during the two conflicts. The fourth section provides an assessment of foreign aid to Russia / USSR during the two conflicts. Conclusions follow.

THE RUSSIAN ECONOMIC, INDUSTRIAL AND MILITARY MOBILIZATION BEFORE AND DURING WORLD WAR I

Before World War I Russia had been a major European power mainly because of its quantitative strengths. Between 1896 and 1910, the aggregate gross industrial index increased from 100 in 1896 to 209.7 in 1910 [1]. Although industrial production doubled in absolute numbers this increase was rather modest. In 1913 Russian industrial production was just the 6%-8.2% of global industrial production [2]. By comparison the US industrial production accounted for the 36%-32% of global production, the German production was 16%-14.8%, the British production was between 14%-13.6% and the French production was between 6.4%-

6%, of the total global industrial production [3]. By 1914 the 70% of labor force was still employed in the primary sector of the economy and the Russian industry needed immense foreign inflows of know-how, financial capital, and machine tools [4]. Although Russian industrial strength was small when compared to that of other nations, its military strength was considerable. In 1913 there were 241 industries in the defence sector with a total capital of 403,140,000 rubles. There were also another 21 foreign firms capitalized at 36,500,000 rubles. [5] The most important industrial complexes were the Putilov industries, the Tula industries, the three Nikolayev shipyards, the Nevski shipyards, the Briansk steel industries, the Baranovskii industries [6]. There were also four airplane manufacturers located in St. Petersburg, Moscow and Odessa [7]. In spite of the defeat in the Russian-Japanese war of 1904-1905 and the internal revolution by 1914 the Russian armed forces were the biggest in Europe. In 1914 Russia could immediately mobilize an army of 114.5 infantry divisions and 36 cavalry divisions; a total of 5 million men [8]. Turning to artillery in 1914 Russia had 7,030 guns and mortars (6,278 field guns, 240 heavy guns, 502 light mortars and howitzers) [9]. However there were other 2,813 static guns in various fortified positions [10]. The army was rather well supplied. In July 1914 the following amounts of material were in stock: 4,652,000 rifles (103% of the planned reserves), 424,000 pistols (97% of planned reserves), 2,655,000 rounds of ammunition (97% of planned reserves), 6,433,000 shells of 3 inches (103% of planned reserves), 22,344 shells of 4.2 inches (25% of planned reserves), 99,910 shells of 6 inches (61% of planned reserves), 2,132,000 uniforms (88.7% of planned reserves), 2,467,000 pairs of boots (95.5% of planned reserves) [11]. It is obvious that the supply of ammunition for field artillery was high but there were shortages for medium and heavy artillery shells. The most impressive figure was that associated with the expansion of the railway network, a major force multiplier for supplying armies, and transporting troops. Thus railway network length, partially with French loans and financing, increased from 10,731 km in 1870 to 62,300 km in 1914 [12]. It is obvious that although the industrial strength of the country viz. a viz. that of the other powers was tiny its military might was formidable. It is obvious that this contradiction was based on high defence expenditure. Thus according to various studies, Russian defence expenditure during the 1894-1913 period was the highest in Europe; £1,360.6 millions, whereas that of Britain were £1,180.9 million, of France were £758.1 million, of Germany were £1,080.2 million, of Austria-Hungary were £391.1 million and of Italy were £294.2 million [13]. It is obvious that in spite of its economic inferiority Russia had developed a considerable military strength. Turning to the navy we point out that during the Russian-Japanese war of 1904 the Russian navy lost 15 major surface ships and 54 smaller vessels. The cost of these losses was astronomical 255,888,951 rubles [14]. However, an extensive new shipbuilding program was followed and by 1911 the fleet had, the following strength: 13 battleships, 6 battle-cruisers, 10 cruisers. By 1914 11 destroyers and 37 submarines were added. By December 1914 4 more Dreadnought type battleships were added [15]. However human resources were problematic; thus between 1905 and 1912 142 naval court-marshals took place [16].

When the war erupted Russia had to fight in two theatres against three adversaries. The first major war theatre was the so called Eastern Front were Russia had to fight both Austria-Hungary in the south and Germany in the North. The second front was that of the Caucasus in Armenia were Russia had to fight against the Ottoman Empire. The operations in the Russian-German front resulted in major Russian defeats (battles of Tannenberg and Lemberg). By December 1914 Russian losses in the German Russian front were more than 227,000 dead, more than 135,000 prisoners and more than 900 guns. In the Austro-Hungarian front Russian losses were around 1 million and in the Caucasus Russian-Turkish front the losses were just 16,000. Thus in the period August-December 1914 total Russian losses were 1,378,000 men and more than 1,000 guns. These were 27.5% of the total human power and 14.2% of the initial artillery strength [17]. In 1915 the Russians suffered immense military defeats. In the Russian-German front Russian losses were 1,700,000 men (151,000 dead, 683,000 wounded, 895,000 prisoners) with more than 3,000 artillery pieces lost and more than 853,000 artillery shells captured by the German army. Total Russian losses across all fronts exceeded the astonishing amount of 2,100,000 men with more than 3,500 guns and 1,211 machine-guns lost [18]. In 1916 Russian losses across all fronts were 3,600,000 dead and wounded and 2,100,000 prisoners [19]. Thus in two and a half years of war (1914-1916) Russia suffered 8,162,000 dead, wounded and prisoners with more than 6,500 guns lost; almost all the initial artillery strength of the Russian army. These colossal losses triggered immense social dissatisfaction. Both the soldiers as well as the civilians in the home front were dismayed; and social unrest erupted. Thus in the army between March and April 1917 a record number of 2 million desertions occurred whereas in March 1917 in the home front the civilian protestors along with the Imperial Guard looted from the army barracks in St. Petersburg 40,000 rifles, 30,000 pistols and 400 guns [20]. In spite of the dissatisfaction and the supply problems the Russian side made another major offensive in July 1st 1917 with 45 divisions and 1,328 guns [21]. By the end of September the Russians were defeated once again and by November 1st 1917 out of a total strength of 5,925,606 men under arms, the real operational / active force was 2,143,500. This force could still deploy 9,276 artillery guns but the supply of shells was problematic [22]. It was the time of the Great

October Revolution. By December 3rd 1917 negotiations have started between the new Russian government and the Central Powers. By December 17th 1917 an armistice across the Eastern Front was declared. The Russian losses in 1917 are estimated at more than 50,000 dead, 2 million deserted and more than 584 guns and 200 machine guns [23]. Thus total Russian losses in World War I are estimated at 10,212,000 men with more than 7,084 guns. Turning to Russian mobilization we have the following data (Tables 1-4)

Table 1: Russian Industrial Mobilization (1914-1917)

	1914	1915	1916	1917	1918	Total
Airplanes	**170**	**722**	**1,384 (1,893)**	**2,200 (ε)**		4,500 (5,600)
Airplane engines	**25**		**1,398 (920)**	**450**		
Tanks					**Unknown**	
Artillery	**355 (684)**	**2.065**	**8,284/ 8,208 (7,236)**	**4.302**		15,006 (14,287)
Mortars						542
Machine guns	**833**	**4.251**	**11,072**	**11.320**		27,476
Rifles	**700,000**	**865,000**	**1,321,000**			
Grenades	**68.000**	**27.000.000**				
Shells	**3,000.000**	**11,230,000 (12,000,000)**	**28,300,000 33,000,000 (96,000,000)**	**11,470,000**		54,000,000 120,000,000
Bullets		**828,000,000**	**1,020,000,000 1,482,000,000**			
Telephones	**10,000**		**50,000**			

Sources: 1) Norman Stone: "The Eastern Front 1914-1917", Penguin editions, London, 1998, 2) John Ellis & Michael Cox: "The World War I Databook", Aurum Press editions, London, 2001, pages 286-288, 3) Hew Strachan: "The First World War: To Arms", (Volume I) Oxford University Press, 2001, pages 1,049-1,113, 4) Ian Cawood & D. McKinnon-Bell: "The First World War", Routledge 2001, page 46, 5) Randal Gray et al: "Chronicle of the First World War", Volume II (1916-1921), pages 288-290 (The numbers in brackets refer to alternative estimates). The chemical industry produced 4,700 tons of gas which were used. According to Harvey (1994): "Collision of Empires", Phoenix, page 276, Russia produced: 1,893 airplanes, 920 airplane engines, 16,800 guns, 55,400,000 shells. Turning to the Navy during the war the shipyards constructed 109 ships against 70 lost ships. See: John Ellis & Michael Cox: "The World War I Databook", Aurum Press editions, London, 2001, pages 275, 288.

According to a different source the Russian small arms production was as follows (Table 2).

Table 2: Russian Industrial Mobilization (1914-1917)

Weapon systems	Russian made	Imported	Total
Bullets	3.9 billion (79.6%)	1 billion (20.4%)	4.9 billion
Rifles	3.3 million (56.9%)	2.5 million (43.1%)	5.8 million
Machine guns	28,000 (39.8%)	42,000 (60.2%)	70,000
Airplanes & engines	4,900 (37.7%)	8,900 (62.3%)	13,800

Source: Jonathan R. Adelman: "Prelude to the Cold War. The Tsarist, Soviet and US Armies in the Two World Wars", 1988, page 36. The most complete source on Russian mobilization provides the following data (Table 3).

The data demonstrate a constant increase of the defence articles production throughout the war. This increase however failed to cover the immense needs of the army. To illustrate although 4.6 million rifles were in stock before the war until July 1915, 8 million men were mobilized and thus the pre-war rifle stocks were inadequate. The Russian High Command (Stavka) requested a monthly output of 200,000 rifles but the industry was unable to meet this demand [24]. The pre-war planning for artillery shells proved catastrophic. The Stavka presumed that with the pre-war artillery shells stock the needs for 480 days were covered. However when the war erupted the pre-war stocks were used in just 30 days! Thus in September 1914 the Russian High Command requested 1,500,000 shells but the industry could produce only 35,000 [25]. Although the Russian government increased defence spending this did not result in the expected production increases, partially due to corruption. A typical example was the Revdinskoye Industry in the region of Urals. The owner

of the factory got immense government funding in order to increase shell production. However, instead of investing in the production lines the entrepreneur preferred to buy all the local food supplies and re-sell them in the black market achieving immense profits. Furthermore, in order to hide his action he triggered a strike of the labour force in the factory and pointed to the authorities that the strike was the reason for not achieving any production increase [26]. However defence production was also reduced due to limited supply of raw materials. To illustrate, in the Donets Basin the pre-war coal production was 12.2 tons per month; however in 1915 it was 11.3 tons per month and in 1916 it was 9.6 tons. By the end of 1916 raw materials were half of the required quantities by the defence industry [27]. By 1917 there were 1,138 Russian defence industries capitalized at 2,032,400,000 rubbles and there were another 45 foreign firms capitalized at 77,650,000 rubbles; however one third was non-operational [28].

Table 3: Russian Industrial Mobilization (1914-1917)

Weapon system	1914	1915	1916	1917	Total
Rifles (*) (1914=100)	278,000 (100)	860,000 (309)	1,321,000 (475)	1,120,000 (403)	3,579,000
Machine-guns (1914=100)	833 (100)	4,251 (510)	11,072 (1,329)	11,320 (1,359)	27,476
Bullets (1914=100)	345,000,000 (100)	1,022,000,000 (296)	1,482,000,000 (430)	1,209,000,000 (350)	4,058,000,000
Artillery guns 3 inches (1914=100)	385 (100)	1,673 (435)	4,087 (**) (1,062)	3,538 (919)	12,834
Artillery guns 4.8 inches	78	361	637	391	1,467
Guns 12 inches on fortresses	n.a.	4	3	11	18
Shells of 3 inches (1914=100)	616,000 (100)	10,062,000 (1,633)	19,420,000 (3,153)	11,739,000 (1,906)	41,837,000
Shells of 4.8 inches	24,000	371,000	2,213,000	3,238,000	5,846,000
Shells of 12 inches	n.a.	1,600	3,331	7,372	12,303
Time fuses	1,686,000	8,875,000	21,230,000	19,477,000	51,268,000
High explosive fuses	380,000	1,455,000	10,852,000	14,418,000	27,105,000
Metric tons of powder	4,406	8,405	12,102	9,348	34,260

Source: Peter Gatrell: "Russia's First World War. A Social and Economic History", Longman, 2005, page 120

It is obvious that Russia entered World War I with a very limited industrial capacity when compared with other major industrial economies of the era. The pre-war reserves of weapons and ammunition although adequate according to pre-war planning proved extremely poor during the first months of the conflict. Although defence production increased during the war its level could not much the demand of the army and its needs. Thus Russia fought an industrialized war, with limited industrial resources, for 40 months. During this period, total Russian losses (dead, wounded, missing, prisoners), are estimated at 10,250,000 men. Thus out of a pre-war population of 167,000,000 total human war losses are 6.13% of total population [29]. In order to appreciate the Russian contribution to the war effort one can simply refer to the cost which the Russian side inflicted to the Central Powers (Germany, Austria-Hungary and Ottoman Turkey). Germany and Austria-Hungary suffered more than 3,566,300 casualties in the East. Ottoman Turkey suffered another 218,000 casualties; thus minimum losses inflicted on Central Powers are estimated at 3,784,300. Although the ratio between the Russian losses and the Central Powers losses are more than 2:1 in favour of the Central Powers it is obvious that Russian intervention nearly forced Austria-Hungary to kneel and forced Germany to intervene thus depriving serious German forces and material from the Western front as well as other fronts [30]. Thus in March 21st 1918, when the big German attack started in the Western front in the East there were still 42 German divisions (a total of 698,883 men with 176,688 horses, 2,739 guns, 232 mortars, 9,645 machine-guns [31]. Thus Russia, an industrially backward country, managed a war against three states (Germany, Austria-Hungary, Ottoman Turkey) with immense success. The last two (Austria-Hungary, Turkey) were beaten by the Russian armies and suffered immense defeats. Germany managed to win but it had

to alter its plans many times. Thus, in 1915, the German High Command (OHL) was forced to make the Eastern Front a priority simply because the Habsburgs were near collapse.

THE SOVIET ECONOMIC, INDUSTRIAL AND MILITARY MOBILIZATION BEFORE AND DURING WORLD WAR II

The USSR faced a civil war between the supporters of the old regime (White) versus the Bolsheviks (Red). In the period 1917-1921 hyperinflation shook the economy. In January 1918 1 gold rouble=202 paper roubles; however in July 1921 the exchange rate was 1 gold= 80,700 paper roubles [32]. Agricultural production, partially due to weather conditions, was very poor and this triggered an immense famine which caused the death of up to 10 million people [33]. What followed was NEP (=New Economic Policy / Novayia Economitcheskaya Politika) which was implemented during the period 1921-1928. Its primary aim was to increase agricultural and industrial production and to tackle the hyperinflation. After 1928 the era of Stalin emerged and the economy followed strictly the Five-Year plans. The first two were implemented during the periods 1928-1932 and 1933-1937 respectively. The third Five-Year plan (1938-1941) was abandoned when the German-Russian war erupted. The Five Year plans were primarily focused on the development of heavy industry. By 1938 the USSR was the second most rapidly industrialising state of the world (Table 4).

Table 4: Annual Indexes Of Industrial Production (1913-1938)

Year	USA	USSR	Britain	France	Germany	Japan	Italy	World
1913	100.0	100.0	100.0	100.0	100.0	100.0	100.0	*100.0*
1920	122.2	12.8	92.6	70.4	59.0	176.0	95.2	*93.2*
1921	98.0	23.3	55.1	61.4	74.7	167.1	98.4	*81.1*
1922	125.8	28.9	73.5	87.8	81.8	197.9	108.1	*99.5*
1923	141.4	35.4	79.1	95.2	55.4	206.4	119.3	*104.5*
1924	133.2	47.5	87.8	117.9	81.8	223.3	140.7	*111.0*
1925	148.0	70.2	86.3	114.3	94.9	221.8	156.8	*120.7*
1926	156.1	100.3	78.8	129.8	90.9	264.9	162.8	*126.5*
1927	154.5	114.5	96.0	115.6	122.1	270.0	161.2	*134.5*
1928	162.8	143.5	95.1	134.4	118.3	300.2	175.2	*141.8*
1929	180.8	181.4	100.3	142.7	117.3	324.0	181.0	*153.3*
1930	148.0	235.5	91.3	139.9	101.6	294.9	164.0	*137.5*
1931	121.6	293.9	82.4	122.6	85.1	288.1	145.1	*122.5*
1932	93.7	326.1	82.5	105.4	70.2	309.1	123.3	*108.4*
1933	111.8	363.2	83.3	119.8	79.4	360.7	133.2	*121.7*
1934	121.6	437.0	100.2	111.4	101.8	413.5	134.7	*136.4*
1935	140.3	533.7	107.9	109.1	116.7	457.8	162.2	*154.5*
1936	171.0	693.3	119.1	116.3	127.5	483.9	169.2	*178.1*
1937	185.8	772.2	127.8	123.8	138.1	551.0	194.5	*195.8*
1938	143.0	857.3	117.6	114.6	149.3	552.0	195.2	*182.7*
Average	***139,9***	***277,3***	***92,4***	***112,2***	***98,2***	***319,0***	***148,2***	***131,7***

Source: Paul Kennedy: "The Rise and Fall of the Great Powers. Economic Change and Military Conflict from 1500 to 2000", Fontana Press 1989, page 386.

From the data of Table 4 it can be concluded that in 1938, the USSR was the most rapidly advancing industrial economy (second behind Japan) surpassing all Western economies. According to one source by 1938 the percentages of global industrial production were as follows: USA: 28.7%, USSR: 17.6%, Britain: 9.2%, France: 4.5%, Germany: 13.2%, Italy: 2.9% and Japan: 3.8% [34]. At that time the USSR was the biggest airplane manufacturer in the world (although the quality of the machines wa questionable), it was also the third biggest steel producer in the world and the third biggest producer of coal. It was the second oil producer just behind the US and it was also the second producer of iron-ore [35]. It is obvious that the USSR of 1940 was a stronger industrial power when compared to the Tsarist Russia of 1914.

Turning to the military strength the USSR a massive re-armaments and re-organization programme was under by June 1941 when Germany attacked. The Soviets were learning from their past mistakes in Finland and they were also trying to re-organise after the purges of 1936 when most senior officers were perished by Stalin. Although the qualitative aspects of these reforms were still questionable in terms of quantity the USSR had the most numerous armed forces of the globe. A total of 290 divisions, equipped with 23,200 tanks, 116,000 guns and mortars, 24,000 airplanes. From those forces 170 divisions, 10,000

tanks, 34,700 guns and mortars and 9,000 airplanes were deployed in Europe. From a total manpower of 9 million men the Red Army deployed 3 million in Europe [36].

It is obvious that the USSR of 1941 was a stronger country compared to Tsarist Russia of 1914 both in industrial / economic power and in terms of military power. The immense quantitative superiority of the Soviet forces should not be underestimated. It is true that Germany and its Axis allies (Hungary, Finland, Romania) deployed against the USSR the biggest invasion force of history (164 divisions with 4,733,990 men, 3,612 tanks, 12,686 guns and mortars and 2,937 airplanes); however the invasion force was about to enter a country with vast strategic depth, poor quality road network, thus limited manoeuvrability, and above all quantitative inferiority. One German officer assessed the situation by pointing out that the German invasion can be compared to an attack of an elephant on ants. The elephant will kill millions of ants; however the immense number of ants will eventually prevail and eat the elephant to the bone [37].

During the period June-December 1941 the German Armies fought and won in the biggest invasion of history. No-other country had suffered the military and economic losses which the USSR suffered in these six months period. To illustrate the economic losses were: 71% of iron production, 58% of steel production, 63% of coal production, 45% of electric energy. By December 1941, out of a total 2,600 factories, the 1,400 were under German control and the remaining 1,200 were re-located to Siberia far behind the Ural mountains. Only the loss of the Donets basin cost to the Soviet economy 100 million tons of coal. Turning to primary sector the 50% of cereal production was lost, as well as, the 80% of sugar and the 71% of olive-oil production. As a result of these losses by February 1942 coal production was reduced by 32% (compared to June 1941), iron by 35%, steel by 45%, oil by 56%, metals by 43% [38]. According to a different source during June-December 1941 the economic losses were as follows: 31,850 factories, 239,000 electric machine tools, 175,000 manual machine tools, 65,000 of railway km length. In total the 33% of pre-war industry fell in German control. The total economic losses were estimated at 679 billion roubles [39]. Turning to the military losses for the USSR these were as follows (Table 5).

Table 5: Soviet Military Losses June -December 1941

Type of equipment	Available 22-06-1941	Production 22/06-31/12/1941	Grand Total 1941	Losses 1941	% of grand total
Rifles	7,740,000	1,570,000	9,310,000	5,550,000	59.6%
Sub-machine guns	100,000	100,000	200,000	100,000	50%
Machine-guns	248,900	55,100	304,000	190,800	62.7%
Anti-tank guns	14,900	2,500	17,400	12,100	69.5%
Anti-aircraft guns	8,600	3,400	12,000	4,100	34.1%
Guns	33,200	10,100	43,300	24,400	56.3%
Mortars	56,100	42,400	98,500	60,500	61.4%
Rocket Systems (*)	0	1,000	1,000	0	0
Heavy tanks	500	1,000	1,500	900	60%
Medium tanks	900	2,200	3,100	2,300	74.1%
Light tanks	21,200	2,400	23,800	17,300	72.6%
Fighter planes	11,500	6,000	17,500	9,600	54.8%
Ground support planes (**)	100	1,400	1,500	1,100	73.3%
Bombers	8,400	2,500	10,900	7,200	66%
Vehicles	273,000	205,000	478,000	159,000	33.2%
Radio-transmitters	37,000	6,000	43,000	24,000	55.8%

Source: Evan Mawdsley: "Thunder in the East. The Nazi-Soviet War 1941-1945", Hodder Arnold, 2005, page 47. The numbers have been rounded, the aircraft losses have taken into consideration accidents as well. Deliveries by the USA under Lend-Lease Act are included (*)=Katiusha systems, (**)=Refers to Shturmoviki-type (Sturmovick) aiplanes.

Turning to human losses the USSR suffered 2,663,000 dead and 3,350,000 captured thus an overall loss of 6,013,000 men out of an original strength of 9,000,000 (66.81%) [40]. It goes without saying that during June-December 1941 the USSR lost the biggest land and air battle of history. The losses material, economic and human were the biggest ever recorded and it is a miracle that the country was able to continue fighting, recover and eventually emerge from the conflict victorious. During the period June 1941-July

1943 the tactical initiative was in the German side. The Germans attempted a major attack in the south front in the summer of 1942 aiming to capture the oilfields of the Caucasus region; however their attack failed by February 1943 in Stalingrad. However total material losses remained high for 1942 as well. (Table 6) although smaller compared to the first year of the war.

Table 6: Soviet Military Losses January -December 1942

Type of equipment	Available 1-01-1942	Production 1942	Grand Total 1942	Losses 1942	% of grand total
Rifles	3,760,000	4,040,000	7,800,000	2,180,000	27.9%
Sub-machine guns	100,000	1,560,000	1,660,000	550,000	33.1%
Machine guns	113,200	238,200	351,400	106,100	30.19%
Anti-tank guns	5,300	20,500	25,800	11,500	44.5%
Anti-aircraft guns	7,900	6,800	14,700	1,600	10.8%
Guns	18,900	30,100	49,000	12,300	25.1%
Mortars	38,000	230,000	268,000	82,000	30.59%
Rocket systems (*)	1,000	3,300	4,300	700	16.27%
Heavy tanks	600	2,600	3,200	1,200	37.5%
Medium tanks	800	13,400	14,200	6,600	46.47%
Light tanks	6.300	11,900	18,200	7,200	39.56%
Fighter planes	7,900	10,700	18,600	7,000	37.63%
Ground support planes (**)	400	7,200	7,600	2,600	34.2%
Bombers	3,700	4,100	7,800	2,500	32.,05%
Vehicles	318,000	153,000	471,000	66,000	14%
Radio-transmitters	19,000	27,000	46,000	7,000	15.2%

Source: Evan Mawdsley: "Thunder in the East. The Nazi-Soviet War 1941-1945", Hodder Arnold, 2005, page 47. The numbers have been rounded, the aircraft losses have taken into consideration accidents as well. Deliveries by the USA under Lend-Lease Act are included (*)=Katiusha systems, (**)=Refers to Shturmoviki-type (Sturmovick) aiplanes.

The Germans made again a tactical attack occurred in July 1943 in the region of Kursk. Once again the effort failed and thus during the period September 1943-May 1945 the initiative shifted to the Soviet side. However Soviet victory was not the outcome of numerical and tactical superiority in the battlefield. It reflected a more successful industrial mobilization, in spite of the fact that Germany enjoyed an almost absolute advantage on raw materials viz. a viz. the USSR (Table 7).

Table 7: Industrial Production USSR-Germany 1941-1945

	1941	1942	1943	1944	1945
Coal (in mil. tons)					
USSR	151.4	75.5	93.1	121.5	149.3
Germany	315.5	317.9	340.4	347.6	-
Steel (in mil. tons)					
USSR	17.9	8.1	8.5	10.9	12.3
Germany	28.2	28.7	30.6	25.8	-
Aluminium (in thous. tons)					
USSR	-	51.7	62.3	82.7	86.3
Germany	233.6	264.0	250.0	245.3	-
Oil (in mil. tons)					
USSR	33.0	22.0	18.0	18.2	19.4
Germany (*)	5.7	6.6	7.6	5.5	1.3

Source: R. Overy: "Russia's War", Penguin Books, 1999, page 155. (*)=crude oil and synthetic oil production as well as imports.

The data of Table 7 demonstrate that in terms of critical raw materials for the defence industry (steel, aluminium) Germany enjoyed an immense superiority viz. a viz. the USSR throughout the period 1941-1944. The same is associated with coal an immense resource for generating energy at the time. The only raw material, where there is a critical Soviet advantage, is that of oil. However the raw material German advantage failed to become an armaments advantage (Table 8).

Table 8: Selected Military Production USSR-Germany 1941-1945

	1941	1942	1943	1944	1945
Airplanes					
USSR	15,735	25,436	34,900	40,300	20,900
Germany	11,776	15,409	28,807	39,807	7,540
Tanks (*)					
USSR	6,590	24,446	24,089	28,963	15,400
Germany	5,200	9,300	19,800	27,300	-
Artillery					
USSR (*)	42,300	127,000	130,000	122,400	62,000
Germany (*)	7,000	12,000	27,000	41,000	-

Source: R. Overy: "Russia's War", Penguin Books, 1999, page 155. (*)=Tank figures for USSR include Self-propelled guns. For Germany S/P guns are included in 1943 and 1944 only. Artillery pieces of all calibres for USSR, figures for Germany refer to over 37mm guns.

The data of Table 8 indicate that the USSR arms production outperformed the German production, with less available raw materials. Thus, from 1941 to 1944, the USSR produced 116,371 airplanes (versus 95,799 German), 84,088 tanks and S/P guns (versus 61,600 German) and 421,700 guns (versus 87,000 German). Even with the inclusion of smaller calibre guns of Germany the USSR production continues to be higher [41].

The Soviet defence industry was not only efficient and more productive by using limited raw materials and producing more weapon systems viz. a viz. Germany. The industry was able to reduce financial costs during the war years and it was also able to increase labour productivity. To illustrate, the production cost of one Il-4 airplane decreased from 800,000 roubles in 1941 to 468,000 in 1943 and to 380,000 in 1944 and 1945. The cost of one T-34 tank decreased from 270,000 roubles in 1941 to 135,000 in 1943-1944. The cost of 1 KV heavy tank decreased from 635,000 roubles in 1941 to 225,000 in 1943 [42]. Turning to man-hours of work 1 T-34 tank needed 8,000 man-hours in 1941 whereas in 1943 just 3,700. The case for 1 KV tank was 14,600 man-hours in 1941 but only 7,200 in 1943. The production of 1 Il-2 airplane needed 9,500 man-hours in 1941 but only 5,900 in 1943. The production of 1 gun of 152mm calibre required 4,500 man-hours in 1941 but only 2,400 in 1943. The production of one heavy machine gun during the same period requested 642 man-hours, but it was reduced to 329 [43].

The above demonstrate vividly that throughout the war years the Soviet Union was stronger compared to Tsarist Russia. The scale of the economic industrial mobilization was much greater, more efficient, more rapid and more productive. However the big question is what was the cost of the 1945 victory? In order to provide an answer we shall need again the assistance of the statistics. The post war Soviet data demonstrate that during the war the material / economic cost was immense. Thus 1,700 towns were perished along with 70,000 villages, 31,850 factories, 65,000 km of railway network, 4,100 railway stations, 15,800 train engines, 428,000 train wagons, 98,000 agricultural Kolkhoz venues. The total economic cost was estimated at 2.6 trillion roubles [44]. Turning to the human cost of the war the total military losses of the USSR are estimated at 29,600,000 soldiers dead, wounded, captured, missing and to another 17,000,000 civilian. This gives a total cost of 46,600,000. The biggest human price paid in the war [45]. It is obvious that the total cost (both material and human) for the Soviet Union was much higher compared to that of Tsarist Russia.

We can therefore conclude that a paradox exists in the two cases. The Tsarist Russia of 1914-1917 period, was not well prepared for an industrial war and during the war its defence mobilization was rather poor. It fought and lost a war with rather limited raw materials and poor organisational capabilities. In spite of the defeat of 1917 the human and financial costs were rather small. In the opposite is the USSR which was much better prepared for an industrial war and during the war it achieved a much more efficient mobilization of resources and industry; paradoxically however the victory came to late with a very heavy price both in human lives and in resources and materials. Therefore the victory of 1945 can be regarded as a Pyrrhic one. Furthermore the scale of Soviet defeats in 1941 and 1942 had been much greater compared to the defeats of the 1914-1915 periods. To illustrate during the early stage of the war one German attacking division could tight three Soviet divisions, and in the case of defence tactics one German division

would engage seven Soviet divisions. In 1944 one German soldier could inflict 7.78 losses to the Red Army before being killed [46]. It is obvious that the Soviet Union although it had a better pre-war industrial economy compared to that of Tsarist Russia and made a better economic / industrial mobilization failed to materialize these advantages to quick victories.

A COMPARISON OF FOREIGN AID TO RUSSIA AND TO THE USSR DURING THE WAR YEARS

Having analyzed the internal mobilization during the war years we now turn our attention to the economic / industrial aid which the country received during the war years. In the case of the First World War Russia received military and economic aid from its allies. Britain gave the following material: 756 artillery guns (the 509 were heavy), 27,000 machine-guns, 2,740,000 rounds of ammunition, 264 mortars, 1,000,000 rifles, 8,400,000 grenades, 10,000 bicycles and motorcycles, 1,323 cars, 4,533 trucks, 6 airplanes, 649 airplane engines, 2,985,528 artillery shells, 217,000 tons of explosives, 64,000 tons of steel and iron. In addition Great Britain provided loans of £757 million [47]. The US was another source of limited military aid. To illustrate in 1915 the Russian army ordered 3,600,000 rifles to three US companies (300,000 to be made by Winchester, 1,500,000 to be made by Remington and 1,800,000 by Westinghouse). The rifles should be available, during June 1915 to June 1916. However by March 1917 Winchester delivered only the 9% of the order and the remaining two enterprises had delivered only the 12% of their orders each. Turning to artillery shells the situation was also similar. Thus in 1916 the Russian army had placed an order of 40,500,000 shells abroad; however it received only 7,100,000 [48]. During the war the US provided massive loans of $2,165 million to Russia. From those the $1,299 million were given between January 1916 and April 1917. Another $902 million were given between the Kerenski Revolution and the Bolshevik Revolution, however from those only the $435 million were instant money transfers. The $460 million were loans officially given to France on behalf of Russia and another $880 million were loans officially given to Britain on behalf of Russia [49]. French loans only during 1915 were 750 million francs. Indirectly throughout the war the Western allies assisted Russia by engaging massive forces against the Ottoman Empire in the Dardanelles, in the Middle East and in Egypt-Palestine campaigns. It is obvious that if these fronts were not made the Ottoman armies deployed against Russia in the Caucasus would have been much stronger.

During the Second World War the USSR enjoyed much greater aid from its Western allies. The British aid was £312 million which represented the 16% of overall foreign aid given by Great Britain [50]. The British aid during June 1941-December 1944 included: 5,031 tanks, 4,020 vehicles, 2,463 carriers, 1,706 motorcycles, 800 guns with 85,000 shells, 636 anti-tank weapons of 2-pdr, with 2,591,000 shells and 3,200 anti-tank rifles with 1,761,000 rounds of ammunition, 6,135 miles of cable and over 2 million meters of camouflage netting, more than 3 million pairs of boots. Naval supplies included 9 mine-sweeping trawlers, 3 motor minesweepers and 3,006 mines and 329 radar devices for Soviet ships, 195 naval guns with 4,644,930 rounds of ammunition. In terms of aircraft the USSR received 1,331 Spitfires and 2,952 Hurricanes. Turning to machinery Britain gave machine tools valued at £8,218,000, power plants valued at £4,250,000, electrical equipment valued at £3,314,000 and various types of machinery, valued at £3,019,000. The total British aid in terms of food, raw materials, medical equipment, training was valued at £112 million [51].

Turning to the US aid to USSR this was enormous. According to one source the USSR received: 427,284 trucks, 634,000 jeeps, 2,670,371 tons of oil, 100,000 machine tools, 9,600 artillery guns, 5,940 tanks, 19,116 airplanes (2,421 P-63 and 4,764 P-39) [52]. According to a different source US aid to the USSR was as follows: 14,203 airplanes (from those the 9,438 were fighters and the 3,771 were bombers), 6,196 tanks, 363,080 trucks, 43,728 jeeps, 32,200 motorcycles, 325,784 tons of ammunition, 35,089 radio sets, 380,135 telephone kits, 5,899 antennas, 956,688 miles of telephone cables, 782,973 tons of meat, 14,793,000 pairs of boots, 2,577,000 belts, 339,599 tons of copper, 261,311 tons of aluminium, 11,075 railway trucks, 1,900 train engines. Finally 15,000 Soviet mechanics were trained in the US on new technologies [53]. According to a different source total US aid to the USSR was equal to $10,670 million representing the 24% of total US foreign aid in the war years [54]. Another source points out that US aid to USSR via the Far East was 8,250,000 tons, via Persia was 4,200,000 tons, via Murmansk port (northern USSR) was 4,000,000 tons and via the Black Sea was 700,000 tons. Thus total US aid was 17,150,000 tons worth of $10,982 billion. Only via Persia the USSR received 1,250,000 tons of metals, 1,000,000 tons of food, 880,000 tons of vehicles, 150,000 tons of arms and ammunition, 70,000 tons of armoured vehicles, 40,000 tons of airplanes [55].

It goes without saying that the USSR received tremendous aid from the Anglo-Saxon powers during the Second World War, certainly much higher compared to what the Tsarist Russia received during 1914-1917.

CONCLUDING REMARKS

The Soviet Union emerged as a great victor of World War II and the communist propaganda was quick to capitalise on the victory which demonstrated the healthy status of the communist regime viz. a viz. the old decadent Empire of the Romanoff dynasty. In the

eyes of many the Soviet story was real and correct. However a careful re-assessment demonstrates that the pre-war USSR was much stronger militarily and industrially compared to the Russian Empire of 1914. The war effort was also much better organised compared to that of the First World War and also the foreign aid to the Soviet Union was higher compared to that of the Russian Empire. Thus the USSR had enjoyed immense advantages compared to the old Russia. However it is strange that the cost of victory was so high. The war on the East lasted for 47 months and in this period the total human losses (dead, wounded, missing, captured soldiers and also civilians) was estimated at 46,600,000 out of a total pre-war population of 194,000,000; thus the 24% of total population. To this we have to add the official Soviet figures of material losses worth of 2.6 trillion roubles. So here is the paradox since the USSR, a state better equipped and supplied compared to old Imperial Russia, and with more efficient economic mobilization and with higher foreign aid; suffered disproportional higher losses from an enemy which even did not mobilise economically as efficiently as them. This makes the Soviet victory a pyrrhic one; the immense human sacrifices associated with high material costs demonstrate that the war effort was rather inefficient and the glorious picture of the 1945 victory is rather the outcome of communist lenses which unfortunately many in the West wear for too many years and accepted the Soviet assertion.

Obviously one has to acknowledge the sacrifices and the efforts which were made by the ordinary soldiers and officers of the Red Army, as well as the partisans and the civilians. It was the effort of the low ranks and the ordinary people which brought the 1945 fall of Berlin. The Soviet leadership in spite of the country's advantages failed to produce a quick result and one which could have an acceptable level of losses. The ramifications of this inefficiency are still with us today, since the pschycological need of the old communist regime to portray victories (especially when compared to the old Romanoff Empire) produced one lie next to another. Thus after the "glorious 1945 victory" the Soviet citizens learned about the "economic miracle" of the state which produced reconstruction (higher living standards) and security (via defence spending). After the reconstruction miracle the Soviet citizens were informed that constant economic growth would improve the living standards of the populations. This was another myth which Soviet economists after 1987 abolished [56]. The myths terminated in 1991 when the USSR collapsed. However the legacy of the propaganda myth continued. Many still believe that USSR was more successful than Imperial Russia we believe that this article demonstrates the real truth which is exactly the opposite.

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