THE SOVIET ECONOMY AND RELATIONS WITH THE UNITED STATES AND BRITAIN, 1941-1945

Mark Harrison

Department of Economics
University of Warwick
Coventry, England CV4 7AL
Tel +44 203 523030
Fax +44 203 523032

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INTRODUCTION

There is a long history of studies of Allied economic relations with the USSR during World War II. Most of these were written from the viewpoint of diplomacy and strategy, and they were commonly influenced by a desire to search retrospectively for historical roots of the Cold War which followed.[1]

Until quite recently, economic studies of wartime inter-Ally relations were much fewer, and little special reference was made to aid to the USSR.[2] This is surprising

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[1] Raymond H. Dawson, The Decision to Aid Russia, 1941: Foreign Policy and Domestic Politics (Chapel Hill, N.C.: University of North Carolina Press, 1959); Robert Huhn Jones, The Roads to Russia: United States Lend-Lease to the Soviet Union (Norman, Okla.: University of Oklahoma Press, 1969); George C. Herring, Aid to Russia, 1941-1946: Strategy, Diplomacy, the Origins of the Cold War (New York: Columbia University Press, 1973); Leon Martel, Lend-Lease, Loans, and the Coming of the Cold War (Boulder, Colo.: Westview Press, 1979); Joan Beaumont, Comrades in Arms: British Aid to Russia, 1941-1945 (London: Davis-Poynter, 1980); Peter J. Titley, "Royal Air Force Assistance to the Soviet Union, June 1941 to June 1942", unpub. MA thesis, University of Kent (1991).

[2] Thus R.G.D. Allen, "Mutual Aid Between the US and the British Empire, 1941-1945", Appendix 3 of R.S. Sayers, Financial Policy, 1939-1945, (London: HMSO, 1956), 518-556, made incidental reference to aid to the USSR in a broader study of transatlantic transfers. For brief evaluations of the importance of Lend-Lease within studies of other topics in Soviet economic analysis, see Abram Bergson, The Real National Income of Soviet Russia Since 1928 (Cambridge, Mass.: Harvard University Press, 1961), 99-100n; G. Warren

since Lend-Lease was nothing if not a resource transfer, and it was the economic significance of the transfer to the USSR which fuelled controversy for so many years. Without independent economic analysis the controversy was unlikely ever to be resolved; it could never rise above the claim of the recipient that the scale of the transfer in cash and percentage terms was small, and of the donors that such overall totals were immaterial since it was the physical form of Allied aid which represented the critical ingredient in Soviet victory.

Why is a distinctively economic analysis of inter-Ally aid and trade necessary? The core of the problem is to understand what would have happened without these transfers of resources. Our ability to recast historical alternatives by the use of "counterfactual hypotheses" is limited, and many historians rightly flinch from overt speculation. However, it is important to understand that, even after a certain amount of Cold War inflation of the American contribution in the late 1940s and early 1950s had been overcome, the western literature in this field remained

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Nutter, The Growth of Industrial Production in the Soviet Union (Princeton, N.J.: Princeton University Press, 1962), 214; Susan J. Linz, "Economic Origins of the Cold War? An Examination of the Carryover Costs of World War II to the Soviet People", unpub. PhD thesis, University of Illinois at Urbana-Champaign (1980), 25-33; James R. Millar, "Financing the Soviet Effort in World War II", Soviet Studies, **32** (1980), 116; Mark Harrison, Soviet Planning in Peace and War, 1938-1945 (Cambridge: Cambridge University Press, 1985), 149-50; Susan J. Linz, "World War II and Soviet Economic Growth, 1940-1953", in Susan J. Linz, ed., The Impact of World War II on the Soviet Union (Totowa, N.J.: Rowman & Allanheld, 1985), 25-27; William Moskoff, The Bread of Affliction: the Food Supply in the USSR During World War II (Cambridge: Cambridge University Press, 1990), 119-22; John Barber, Mark Harrison, The Soviet Home Front, 1941-1945: A Social and Economic History of the USSR in World War II, (London: Longman, 1991), 33-34, 189-90. For special attention devoted to this neglected field see only Robert Munting, "Lend-Lease and the Soviet War Effort", Journal of Contemporary History, **19** (1984), 495-510; Robert Munting, "Soviet Food Supply and Allied Aid in the War, 1941-1945", Soviet Studies, **36** (1984), 582-93; Hubert P. van Tuyll, Feeding the Russian Bear: American Aid to the Soviet Union, 1941-1945 (Westport, Conn.: Greenwood Press, 1989).

dominated by very strong, usually unspoken assumptions about economic alternatives which economists would often prefer to question or qualify.

A feature common to most western studies of aid to Russia has been an additive, "building-block" approach. At its simplest, the Soviet war effort as comprised of a number of building-blocks of military personnel and matériel, each of which was complementary to the effort as a whole at the given stage of the war; take away any one of these blocks, and the whole war effort was disabled. Some of these blocks were labelled as domestically sourced, some as originating in Great Britain and the United States. The main blocks of Red Army firepower and personnel, which sufficed to stave off defeat in 1941-42, were made at home. Added to these in 1943-45 were imported blocks of more technically sophisticated means of communication and mobility which made possible the great strategic offensives. This approach is additive in the further sense that it sees the allocation of domestic blocks to the war effort as predetermined independently of the availability of imported blocks, which were therefore simply added on to the war effort; if taken away, they could not have been replaced from domestic sources.

The timing and composition of aid are both seen as important to this analysis. The time factor was as follows. The inflow, slow at first, began the period of its peak rate in the second half of 1943. By then the Germans had already suffered three huge defeats on the eastern front, at Moscow, Stalingrad, and Kursk-Orel. The strategic offensive capacity of the Wehrmacht had in practice been eliminated. With the turn in the war's tide, a new phase was under way which determined the character of Allied victory and German defeat. But German troops were still deep inside Russia, and in the west Allied forces had only just won their first toehold on the continent of Europe in Sicily. The Battle of the Atlantic was still intense. The German war economy was intact, despite Allied bombing, and German war production

was accelerating. Without a further rapid unravelling of the German position in the east it was easy to suppose that many years of fighting lay ahead. At the same time, the military feats of the Red Army had been purchased at huge cost in human life and equipment, while living and working conditions in the Russian interior were very poor and food supplies were even deteriorating.

The composition of Allied aid to Russia has been seen in this context as having made a disproportionate contribution. The Soviet Union produced its own firepower in World War II, but relied extensively on imported means of mobility. The particular material form which aid took reinforces this view. Imported firepower (mainly aircraft and tanks) was prominent in the first trickle of aid in 1941-42, but from 1943 onwards it was motor vehicles, high-grade fuels, communications equipment, industrial machinery, naval vessels, and concentrated and processed foodstuffs which predominated, all essential to the manoeuvrability and logistical supply of modern armies.

Thus, the Red Army's destruction of Germany's offensive power in 1941-42 was accomplished largely on the basis of Soviet domestic supply; but its technical ability to pursue the retreating Wehrmacht, to project Soviet military power into the heart of Europe, to meet up with the Allied ground forces advancing from the west, and end the war in Europe in May 1945, was based significantly upon western resources.[3]

Why did the Soviet Union need this western aid? The explanation implicit in this approach stressed critical gaps and shortfalls in the technological and organization assets available to Soviet industry, usually in high-technology processes or the capacity to finish products where qualitative attributes were crucial. On the whole, in this view, the technical form of each block was its defining characteristic; there was little or no substitutability

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[3] Munting, "Lend-Lease", 495; Barber, Harrison, The Soviet Home Front, 190.

between high-grade and low-grade building blocks, and similarly between blocks of domestic and foreign resources. A lack of high-technology, high-quality equipment could not be counterbalanced by increasing the availability of low-grade goods and human services; since Soviet industry could not match the quality of flow products of American electrical and mechanical engineering and petrochemicals, foreign resources could not be replaced by domestic resources.[4]

While reporting dollar and ruble totals of the aid inflow, and calculating them in varying percentages of Soviet industrial production or national income at the time, western studies tended to attach little importance to such figures; in more than one expert view, "United States aid to Russia played a much more vital war role than it would appear from the cold statistics."[5] What did the cash value or percentage ratio matter, if the simple truth was that without Lend-Lease it could not have been done? The literature emphasized the "disproportionate effects" attributable to Lend-Lease supplies,[6] which filled "critical gaps", made good "painful shortages",[7] and permitted "real

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4 This hypothesis is supported by the suggestion that the wide range of goods requested by the Soviet authorities for import under Lend-Lease arrangements reflected a Soviet intention to copy across a wide range of western technology (van Tuyll, Feeding the Russian Bear, 26).

5 Jones, The Roads to Russia, 238.

6 Herring, Aid to Russia, 286: "In some cases, raw materials or machinery helped to expand Russian productivity" (emphasis added here and below). Van Tuyll, Feeding the Russian Bear, 72-73: "American shipments of specialized chemicals, metals, and industrial machinery may have had a disproportionate effect on Soviet production".

7 Herring, Aid to Russia, 286: "Arms, industrial equipment, raw materials, and food filled critical gaps in Russian output and allowed Soviet industry to concentrate on production of items for which it was best suited. Railroad and automotive equipment facilitated the delivery of all types of supplies to the battle fronts." Jones, The Roads to Russia, 224: "The total tonnage of oil products lend-leased to Russia represented only a fraction of her total petroleum

additions" to the available assortment of supply.[8] Western resources were simply indispensable to the Soviet war effort. In this spirit Khrushchev's reminiscences are often cited: "Without Spam we wouldn't have been able to feed our army"; of American trucks, "Just imagine how we would have advanced from Stalingrad to Berlin without them!"[9]

The additive, building-block approach, with its stress on the qualitative differences between Soviet and western products, captured an important aspect of reality - especially the way in which the military effectiveness of Soviet-produced defence assets was augmented as a result. However, the idea that there was no substitutability between

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consumption, but again this is a misleading fact. Although north-route convoys suffered severe attacks and frequent suspensions, a substantial amount of petroleum arrived in Murmansk, which was close to the northern front, thus relieving painful shortages caused by the interruption of Soviet rail communications with the Caucasus region. Also a little additive goes a long way, and many Russian aircraft flew on gasoline that was power-boosted in this manner; the hundreds of thousands of American-built trucks also consumed Soviet gasoline to which blending agents had been added. Once again, comparison between Lend-Lease shipments and Russian production serves no useful purpose." Listing vehicles, railway and communications equipment, industrial machinery, and concentrated foods, Beaumont, Comrades in Arms, 212-13, found that "certain categories of western supplies were vital to the Soviet war effort . . . . Other western supplies were not provided in such spectacular quantity but they were nonetheless significant in the Soviet war effort. Either they were highly sophisticated and technically specialized or they filled important gaps in Russian production . . . . Other critical shortages in the Soviet economy were filled by aluminium and copper . . . ."

[8] Van Tuyll, Feeding the Russian Bear, 72-73: "Using gross percentage figures to evaluate Lend-Lease does not allow a clear view of whether Lend-Lease merely provided additional increments to materiel the soviets were already manufacturing, or which aid items were shipped which they could or did not make. Thus American shipments of specialized chemicals, metals, and industrial machinery may have had a disproportionate effect on Soviet production." Moskoff, The Bread of Affliction, 122, on food products imported under Lend-Lease: "the meats and oils were a real addition to the diets of those who received them."

[9] N.S. Khrushchev, Khrushchev Remembers (London: André Deutsch, 1971), 199.

domestic and imported means, or between products in military and civilian use, was excessively deterministic and led to unfortunate results. On one side the contribution of western aid to the Soviet war effort was exaggerated; the possibility that it released Soviet resources for non-war uses, while admitted in theory, was not identified in practice. On the other side, where identifiable lend-leased goods were diverted to non-war applications, this was judged illegitimate. Like some undeserving recipient of social security accused of going on holiday at the taxpayers' expense, the Russians were not supposed to have purposes of their own. Here the additive approach was very much in the spirit of the Lend-Lease Act, which intended aid commodities to be used only for the war, and to be additive to domestic resources already so committed. For the social scientist, however, it is behaviour which tests the law, not the law which tests behaviour.

In strictly converse fashion the official Soviet historiography remained dominated by a broad assumption that without Lend-Lease not much would have been different. Western analysts were accused of spreading the myth that the Red Army had won its victories only because of western means,[10] and that only American aid had "saved Russia";[11] Lend-Lease was described, in relative terms, as "highly insignificant".[12]

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[10] Istoriia Velikoi Otechestvennoi voiny Sovetskogo Soiuza 1941-1945 gg., **6** (Moscow: Voenizdat, 1965), 48.

[11] Istoriia sotsialisticheskoi ekonomiki SSSR, **5** (Moscow: Nauka, 1978), 545.

[12] Istoriia Vtoroi Mirovoi voiny 1939-1945 gg., **12** (Moscow: Voenizdat, 1982), 187. Munting, "Lend-Lease", 495, concurs, describing the impact of allied deliveries as "minor", relying in part on an official Soviet figure of 4 per cent which, if accepted, would probably support such an assessment; see also Millar, "Financing the Soviet Effort", 123n. The meaning of the 4 per cent is discussed further below.

INSTITUTIONAL ARRANGEMENTS

At first the British and the Americans offered aid based on loans - £10 million (16 August 1941) and $1 billion (30 October). Under the first supply protocol agreed among the three countries in Moscow (19 October), Britain and the United States took on a shared responsibility for supplying and shipping goods to the USSR. The American loan was shortly converted into a Lend-Lease credit (7 November), to which a further $1 billion was added (18 February 1942).

A few days after this (23 February 1942) the first Master Agreement governing Lend-Lease to the UK was signed by American and British representatives, and a similar master agreement was eventually concluded (11 June) with the USSR. The spirit of the master agreements (in Roosevelt's words) was to "eliminate the silly, foolish, old dollar sign", that is, to get rid of the concept of the financial obligation of the recipient to the donor.[13] Instead of saddling her Allies with postwar debts, the United States would instead require the sharing of information, and postwar cooperation in restoring a liberalized world economic order. This would apply not only to future shipments but also, retrospectively, to shipments already received under existing protocols. Thus, Lend-Lease ceased to involve either lending or leasing, and became instead a conditional gift.

The distinction between United States Lend-Lease and mutual aid originating elsewhere became thoroughly blurred. Under the first two protocols (October 1941-June 1942, and July 1942-June 1943), the British and the Americans organized aid to the USSR jointly, offering supplies from a common pool. For the third and fourth (1943/44 and 1944/45) they were joined by Canada, although Canadian aid to the Soviet Union remained small in quantity.

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[13] Jones, The Roads to Russia, 95.

The logistical difficulties facing the aid programme were awesome. The land and maritime routes through which most prewar Soviet trade had passed were in German hands; indeed, a high proportion of this trade had been with Germany. Initially, supplies were concentrated on the north Atlantic route to Murmansk and Archangel, but eventually the dangerous northern convoys accounted for less than a quarter (23 per cent) of total tonnage supplied. A safer, but far more circuitous route was soon opened through the Persian Gulf and Iran into Soviet Central Asia, and this route too accounted for roughly a quarter (24 per cent) of total Lend-Lease tonnage. The Pacific route from American west coast ports, skirting Japanese waters to the Soviet far east and across Siberia, was eventually most heavily used, carrying nearly one half (47 per cent) in tonnage terms.[14]

The fulfilment of supply obligations was always patchy. The Allies had their own strategic plans and priorities, and aid to the USSR inevitably detracted from these. Simply solving the logistical difficulties, which ranged from running the German submarine gauntlet in the north Atlantic to pioneering truck routes through the mountains of central Asia, required substantial additional resources. From the Soviet standpoint, the Allies used plans which they had no intention of carrying out (for example, to open a "second front" in northern France, first in 1942, then in 1943) to justify the irregular arrival of incomplete consignments.[15]

The conditionality of Lend-Lease presented both sides with delicate problems never resolved. In the late summer of 1941 Soviet leaders were reluctant to consider an offer of Lend-Lease and preferred to think in terms of a loan, perhaps because they feared the conditions which might be

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[14] Jones, The Roads to Russia, 84. The remaining tonnage arrived via the Soviet ports of the eastern Arctic, and (in the last months of the war) across the Black Sea.

[15] Istoriia sotsialisticheskoi ekonomiki, **5**, 542-43.

attached to aid.[16] This reluctance was not overcome until September, when the severity of the German threat to Leningrad and Moscow had become all too clear to both sides.

Possible conditions for American aid ranged from the regulation of Soviet behaviour in eastern Europe to the sharing of military and economic information. In the event, Roosevelt set his face against such conditions, believing that they would only get in the way of the main task, which was to enable the Russians to fight Germany.[17] Aid which was effectively unconditional would at least weaken Soviet mistrust and keep the Russians in the war. For their part the Russians, despite an initial preference for the prospect of postwar repayment over political ties, eventually made a variety of promises with regard to their future behaviour (for example, making a commitment to postwar trade liberalization under the June 1942 master agreement). By the end of the war they had become unwilling to contemplate repayment on any significant scale, even for stocks of lend-leased civilian goods valued by the Americans at $2.6 billion, which no longer had any bearing on Soviet war needs.[18]

The disorderly character of the transition to peace in 1945 would beset Soviet-American economic relations for decades. In 1944-45 the combined dollar value of industrial materials and products, motor vehicles and parts, and petroleum products accounted for 55 per cent ($2.8 billion) of Lend-Lease deliveries, compared with 41 per cent ($1.7 billion) of deliveries in 1941-43.[19] This implied a

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[16] Jones, The Roads to Russia, 51.

[17] Herring, Aid to Russia, 38-39.

[18] Jones, The Roads to Russia, 261.

[19] United States President, Reports to Congress on Lend-Lease Operations, no. 14 (Washington, D.C.: U.S. Govt. Printing Office, 1944), 31; no. 19 (1945), 15; no. 21 (1945), 8. In fact this proportion rose steadily, period by period, from 34 per cent in 1941-42 to 44 per cent (1943),

significant import of investment goods which were not going to be installed in Soviet establishments until after the war was over.[20] Both sides now failed to conclude an agreement under existing provisions of Lend-Lease legislation to allow for Soviet ordering and purchase of civilian equipment for postwar use on easy credit terms. This failure is attributable both to Soviet illusions and to American reluctance. In the changed conditions of 1943-44, American resistance to the policy of unconditional aid grew; this resistance had no immediate effect on policy, but ensured that when new initiatives appeared on the agenda congressional patience was already short. The Russians, on the other hand, believing that the war would be quickly followed by a new capitalist slump, saw the Americans in a weak position and overplayed their hand.[21]

Soviet representatives made three requests for a large, long-term, low-interest loan, the first (1 February 1944) for $1 billion, the second (3 January 1945) for $6 billion, the third and last (28 August) again for $1 billion; the latter request was said to have been lost in the transfer of files from the now-defunct State Department's Foreign Economic Administration, and failed to receive a reply. In the meantime, Lend-Lease to the USSR had been temporarily suspended (12 May) immediately following the German surrender, and was now terminated finally (20 September). The Americans requested payment of $1.3 billion for unused stocks of lend-leased civilian goods still on hand; final settlement in a considerably smaller sum awaited a new era in Soviet-American relations and a Nixon-Brezhnev summit in 1972.

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54 per cent (1944), 58 per cent (the first half of 1945) and 60 per cent (the third quarter of 1945).

[20] E.g. Jones, The Roads to Russia, 223-24.

[21] Herring, Aid to Russia, 112-42.

THE SCALE OF ECONOMIC ASSISTANCE

During World War II all the great powers except for the United States benefited from a significant net import of resources. Both aid and trade contributed to the Soviet economy, but aid was more important.

As far as trade is concerned, between 1941 and 1944 the total Soviet deficit on the external merchandise account reached four billion foreign-trade rubles. This was a sum equal to $765 million at the official exchange rate then current; alternatively, it represented roughly two prewar years' imports.[22] (Two years' imports may sound a lot, but by the late 1930s the Soviet economy had achieved a state of near total autarky, with trade ratios at an historic low - no more than one half of one per cent of national income by 1937, according to one authority.)[23] Trade was particularly important in 1941-42, because the first agreements to ship munitions to Russia were essentially financed through barter, the Americans and British agreeing to accept Soviet raw materials in exchange.[24] The trade deficit was dwarfed by the far larger volume of resources imported into the USSR without charge from the United States and Great Britain under mutual aid. Table 1 shows that US Lend-Lease to the USSR alone accounted for $10.67 billion, and British aid for a further £312 million ($1.26 billion), making nearly $12 billion in total (see also figures 1 and 2).[25]

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[22] Calculated from Ministerstvo Vneshnei Torgovli SSSR, Vneshniaia torgovlia SSSR. Statisticheskii sbornik. 1918-1966 (Moscow: Mezhdunarodnye Otnosheniia, 1967), 60, applying the official exchange rate of 5.30 rubles per $1.

[23] For estimated peacetime trade ratios in time series see Paul R. Gregory, Robert C. Stuart, Soviet Economic Structure and Performance, 4th edn (New York: Harper & Row, 1990), 325.

[24] Jones, The Roads to Russia, 52.

[25] Figures are taken or calculated from Allen, "Mutual Aid", 529, 535, using current prices, and applying the official exchange rate of $4.03 per £1.

The timing and composition of aid are further illustrated in tables 2 and 3. According to incomplete records (table 2), the bulk of Lend-Lease shipments - some 57 per cent by dollar value - arrived in the second half of 1943 and in 1944. In the first phase, when the flow was still restricted, weapons predominated (table 3), but from 1943 onwards the greater part of lend-leased items by dollar value consisted of dual-purpose products (industrial, transport, communications, and farm equipment, metals and metal products, chemical, fuel and food products).

In terms of overall resources of the western allies these large-sounding transfers amounted to less than one might suppose at first sight. Aid to Russia was less than a quarter of the total of economic assistance rendered by the British and Americans to each other and to others, as Soviet historians unfailingly pointed out (again, see figures 1 and 2).[26] It was still smaller as a fraction of the combined war expenditures of the United Kingdom and United States, which totalled approximately $295 billion from mid-1942 through mid-1945; compared with this, aid to the USSR amounted to no more than 4 per cent.[27]

By coincidence, 4 per cent has more than one significance. At the end of 1947 the wartime planning chief, N.A. Voznesenskii, published an account of the Soviet wartime economic effort which included reference to the growth of Soviet imports in 1942-43, mainly from Britain and America, compared with the much lower level of 1940; "a comparison between the amount of these allied deliveries of industrial goods to the U.S.S.R. and the volume of industrial production at the Soviet Socialist enterprises in the same

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[26] Istoriia sotsialisticheskoi ekonomiki, **5**, 586; Istoriia Vtoroi Mirovoi voiny, **12**, 186.

[27] See table 1 and, for war expenditures of the US (in dollars) and UK (in sterling), Allen, "Mutual Aid", 542 (I assume that US war spending in the first half of 1942 amounted to 40 per cent of the annual total; calculations are again based on current prices and exchange rates).

period", he wrote, "will show that these deliveries amounted to only about 4 per cent of the domestic production during the war economy period".[28] (But whether "the same period" meant 1942-43, or "the war economy period" as a whole, was left irritatingly vague. In later writing, east and west, this figure would be extensively misquoted, and was most commonly rendered as the proportion of all Allied deliveries to the total wartime product of the entire Soviet economy, with "only" as an additionally wounding qualifier - "only 4 per cent".)[29]

Since "only" 4 per cent did not sound like much at all (and certainly much less than $10,670,000,000), American responses were angry. Alexander Gerschenkron pointed out, correctly, that in 1942-43 Allied deliveries had not yet reached their peak, and that any comparison of nominal values would understate the value of imports relative to Soviet domestic production because of wartime overvaluation of the ruble, and because of double-counting of domestic output in the Soviet production accounts; he also signposted the future course of western historiography by adding: "the tremendous contribution to the Russian war economy made by scarce commodities delivered under lend-lease cannot be significantly measured in terms of a global percentage".[30]

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[28] N.A. Voznesensky, War Economy of the USSR in the Period of the Patriotic War (Moscow: Foreign Languages Publishing House, 1948), 61.

[29] M.L. Tamarchenko, Sovetskie finansy v period Velikoi Otechestvennoi voiny (Moscow: Finansy, 1967), 54: "The relative weight of [Allied] deliveries compared with domestic output in the period of the war amounted to only 4 per cent". Istoriia sotsialisticheskoi ekonomiki, **5**, 546: "Overall Anglo-American deliveries in comparison with the volume of domestic output amounted in the war-economy period to a total of only 4 per cent". More circumspectly, Istoriia Vtoroi Mirovoi voiny, **12**, 187: ". . . Lend-Lease deliveries to the USSR were highly insignificant - about 4 per cent of the output of industrial products in the USSR" (emphases added).

[30] Alexander Gerschenkron, Review of Voennaia ekonomika SSSR v period otechestvennoi voiny (N.A. Voznesenskii), American Economic Review, **38** (1948), 656.

For the record, it is worth stating that "only 4 per cent", although probably not an outright lie, certainly presented a misleading view of the real volume of Allied aid to the USSR. Table 4 shows the present author's estimate, which compares volumes of Allied aid with Soviet wartime GDP and defence outlays when all are calculated at peacetime factor costs in the prewar year 1937 (see also figure 3). It shows that by 1943, Allied aid was contributing 14 per cent of the total of resources available to ("absorbed" by) the Soviet economy, and represented 16 per cent of domestic output. This puts a very different complexion on the scale of assistance, of course, although an import ratio to GDP of even 16 per cent was not out of line with the wartime experience of other European countries - for example, Britain in 1940, or Germany in 1942-43.[31]

The official Soviet accounting for Allied aid and trade remained secret throughout the period of existence of the Soviet state. Government archives now show that in spirit the Soviet finance ministry treated Lend-Lease in the same way as did the Treasury in the United Kingdom; that is, Lend-Lease goods acquired by the armed forces and industry were treated as expenditure items by the relevant spending departments; the resulting hole in the state budget was filled by treating Allied credits as revenue from a counterpart fund.

A special feature of Soviet practice is that foreign aid was made to work twice over by additionally charging high import duties on the commodities imported; these created further revenues to the budget, additional to Allied aid, which also contributed to the finance of war spending. Effectively, the charging of duties on lend-leased imports compensated for the overvaluation of the ruble; foreign munitions, for example, were evidently transferred to the defence ministry at the dollar price times the ruble/dollar

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[31] Mark Harrison, "Resource Mobilization for World War II: The USA, UK, USSR, and Germany, 1938-1945", Economic History Review, **41** (1988), 189.

exchange rate, plus a tariff levied by the foreign trade ministry. Commercial trade, although on a much smaller scale, also contributed to budgetary finance through import duties imposed on incoming goods and effectively paid by the departments which procured western commodities.

Tariffs appear to have been set on the basis of an arbitrary levy - arbitrary because "domestic market prices are not applicable to the given commodities" (equipment and munitions). At the end of 1941 it was proposed to set the tariff on aid commodities at 100 per cent; thus the 5,514 million rubles of foreign revenue arising from the current lines of US and British credit ($1 billion and £10 million respectively), would be doubled in terms of total revenues accruing to the budget.[32] In the upshot, a higher tariff was initially adopted. Thus, considering 1942 in prospect, the people's commissariat of foreign trade, Narkomvneshtorg, forecast revenues of 5.3 billion rubles ($1 billion) from Lend-Lease credits, plus import duties from associated imports estimated at 7.95 billion rubles - an average ad valorem tariff of 150 per cent.[33] In the 1942 outturn, this plan was nearly achieved: Narkomvneshtorg revenues were reported as loans (4.45 billion rubles) plus import duties (7.2 billion rubles, a levy of roughly 160 per cent), and virtually all of this was a net contribution to the budget.[34] (However, the high tariffs of 1942 would apparently prove temporary, as will be shown below.)

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[32] Rossiiskii Gosudarstvennyi Arkhiv Ekonomiki (RGAE), formerly Tsentral'nyi Gosudarstvennyi Arkhiv Narodnogo Khoziaistva SSSR (TsGANKh SSSR), f. 7733, op. 27, d. 714, l. 11.

[33] RGAE, f. 7733, op. 27, d. 714, l. 10. The forecast additionally listed commodities imported against foreign currency reserves, put at 1.7 billion rubles, making a total expected revenue for Narkomvneshtorg of 14.95 billion rubles.

[34] RGAE, f. 7733, op. 27, d. 196, ll. 1-3.

Table 5 shows a more detailed pattern. In 1942 and the first half of 1943 the cumulative total of budget revenues from Lend-Lease credits and import duties reached 20,830 million rubles, of which just over half (11,263 million rubles) constituted original dollar aid. The planned figures for the first quarter of 1942 illustrate the anticipated gains from aid (cruelly disappointed, at least to begin with), augmented by an import levy at 150 per cent. Not all import duties were raised on lend-leased goods, of course. Particularly in 1942 the Lend-Lease operation encountered immense logistical difficulties, which constricted the inflow of aid; on the other hand, there was still some commercial importing for Narkomvneshtorg to tax. Levies on commercial imports undoubtedly confuse the picture shown in the table. By 1943, however, two changes had taken effect: aid flows had reached a far larger scale than commercial trade, which was still shrinking; and the charges levied on imports, both actual and planned, had shrunk to much more modest levels. While the trend suggested by the table is deceptive (because not all the import charges were levied on lend-leased goods, and this was especially the case in 1942), the actual decline in duties collected is so clear that a change of policy must be assumed; the planned figures also show clearly the intended downward trend.

One possibility is that the high import duties imposed on aid commodities in 1942 were determined under peacetime rules, which set higher, penal rates for unplanned imports compared with planned imports. Why else, at the end of 1942, did foreign trade minister A.I. Mikoian sign a decree exempting wartime imports (virtually all of which were "unplanned") from these penal duties?[35]

As a result, the overall budget contribution arising from Allied aid substantially exceeded the 63 billion rubles obtainable by means of a straightforward exchange-rate conversion of $11.93 billion, although certainly not by 150

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[35] RGAE, f. 7733, op. 27, d. 723, ll. 41-42.

per cent. The wartime total is given variously as 78 billion rubles for the period from mid-1941 to mid-1945,[36] and 82.7 billion rubles for the period up to the end of 1945.[37]

According to table 6, when charged to the defence budget at current prices and taxes, items for Army use alone amounted to 31 billion rubles over 1942-45, and 10 per cent of all Army procurement at the peak in 1944; in that year imported products accounted for one quarter by value of the food and fuel consumed by the Army, and one eighth of Army equipment.

Foreign transactions also explained a large gap in the official wartime national accounts, which arose between national income (NMP) produced and utilized. According to table 7, the total excess of material utilization over production, 1942-45, reached 96 billion rubles. To find the implied official total of net imports at domestic prices, a sum attributable to insurable asset losses (over four years, say 10-20 billion rubles) should be added to this gap, making a grand total of foreign receipts somewhere in the region of 110 billion rubles. This matches roughly the sum of "other sources of income" (108.4 billion rubles) listed by the budget authorities as from Lend-Lease (82.7 billion rubles, 1942-5), "special revenues" (23.4 billion rubles, 1944-5), and reparations (2.3 billion rubles in 1945).[38]

A final complication, to be mentioned only in passing, is Soviet reverse Lend-Lease. During the war the Soviet Union provided American transport ships and bomber aircraft with base and repair facilities and supplies, to a value

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[36] RGAE, f. 7733, op. 36, d. 1847, ll. 1-2.

[37] RGAE, f. 7733, op. 36, d. 1847, l. 53.

[38] RGAE, f. 7733, op. 36, d. 1847, l. 53. What were the "special revenues", which began to be collected only in 1944? They were bracketed with Lend-Lease and reparations as though they too were derived from foreign transactions - perhaps the seizure of assets in German territories under Soviet occupation prior to the creation of channels for the formal payment of reparations.

officially reported at $2.2 billion.[39] Since there is no independent means of auditing this large sum, and since it was all spent on Soviet territory, I make no further allowance for it below.

AID AND OVERALL SOVIET RESOURCES

The character of Allied credits to the USSR is an issue which, unresolved at the time, continues to haunt the writing of World War II history. The issue has two aspects, one international, and one domestic. Aid affected the inter-Ally allocation of resources. Was aid a unilateral subsidy from rich to poor; or was it, rather, one aspect of a broader wartime pooling of resources based on mutual specialization and collaboration of equal partners? Aid also affected the domestic allocation of resources of the recipients. In the Soviet case, was aid essential to the Soviet war effort, to what extent did it support the civilian economy, how much was diverted to postwar economic objectives? Such domestic implications of aid are difficult to analyse, and mutual incomprehension often added to inevitable suspicions.

In terms of the Soviet domestic economy, aid had two aspects. It was an addition to overall resources, and it came in particular material forms. The material form of aid was often that of high-technology, high-grade products, which undoubtedly augmented the effectiveness of Soviet fighting power. It would have been very difficult and costly for the Soviet economy to have matched the military-technical qualities of American vehicles, fuels, communications equipment, and food rations. Nonetheless, if the Soviet armed forces had been denied these western resources, they would have procured replacements. The replacements might well have been inferior in quantity and quality. But military units still had to manoeuvre, communicate, and feed and clothe their troops on the march.

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[39] Istoriia sotsialisticheskoi ekonomiki, **5**, 540.

For given total resources, they would have relied more on horses, despatch riders, dried fish, and stale bread. They would have moved more slowly, with less efficient coordination, and they would have fought more hungrily. The same applies to the American machine tools, generating equipment, and farm machinery imported to meet the needs of the productive economy. If aid had taken the form only of additional Soviet-technology, Soviet-grade products, the needs were still there, and would also have been met, but at higher cost and less well.

Aid was also an addition to overall resources. From this point of view its technical or military-technical form did not matter. What mattered was that aid gave the Soviet government the capacity to allocate more resources of all kinds towards all of its objectives, whether military or civilian, immediate or postwar. How did it, in fact, choose to do so?

The choices made by Soviet leaders in allocating resources between war and nonwar uses varied at different stages of the war. They were the outcome of a process of decision making which operated at two levels of abstraction. Their starting point was the extreme consequences of defeat for national and personal survival; defeat was to be avoided at all costs. At a higher level one may suppose, therefore, that Soviet leaders would have liked to maximize the resources for the war effort, subject to the maintenance of a minimum level of civilian and infrastructural economic activity. In practice, however, the location of the minimum was impossible to discover ex ante. This was for several reasons. For one thing, officials systematically repressed unofficial expression of civilian discontent, and mistrusted the signals of consumer and producer need officially transmitted upward through the administrative system from firms and households. For another, the degree of economic deprivation which could be tolerated by society depended on the period of time over which it had to be endured, and this could not be known in advance.

At a lower level of abstraction, therefore, in the first phase of the war, rather than risk immediate defeat for lack of sufficient mobilization, they followed a course of taking everything available for the war effort - "All for the front!". In the process the civilian economy collapsed, the minimum tolerance limits of society were breached, overworking and malnourishment became widespread, civilian mortality rose, and the infrastructure of war production was undermined. Postwar perspectives played no role in this first period, since the only priority was to stave off defeat and ensure the ability to continue fighting. During 1942 there took place a transition to a second phase in which the narrowly military mobilization ceased to be all important.[40] The civilian economy rose in priority, and ceased to decline. From now on, defence outlays were allowed to rise only on the basis of newly available resources. This was also a period in which, with the prospect of eventual victory, postwar perspectives reasserted themselves, and were expressed in a series of plans for reconstruction of industry and the capital stock.[41]

Of course, no minuted decision tells us in what proportions Stalin's war cabinet proposed to allocate the incremental resources represented by aid, year by year. The actual allocation of resources in 1942-44, however, is shown in table 8, part (A). Here are estimated series for total absorption (GDP, plus net imports), defence outlays, and gross investment at prewar constant factor costs. Real defence outlays rose rapidly from year to year, but less rapidly than the increase in the total of available resources. Of the 78.6 billion ruble increase in resources available ("absorption", at 1937 factor cost) in 1943 and 1944 over 1942, no more than half was allocated to

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[40] A much milder ricochet from excess to restraint can be observed in the British case, in the cabinet decision of 1941 to place a ceiling on the size of the armed forces (W.K. Hancock, Margaret Gowing, British War Economy (London: HMSO, 1949), 289).

[41] Harrison, Soviet Planning, 192-97.

additional defence outlays, the remainder being available for civilian use.

Civilian uses are shown as gross investment and consumption. Gross investment collapsed with the outbreak of war, and was slightly negative in 1942, with small amounts of fixed capital formation more than offset by inventory disinvestment; to set these figures in context, nearly 12 billion rubles of fixed investment were necessary just to replace annual depreciation of the fixed capital stock in Soviet hands.[42] Investment recovery after 1942 was guided first by requirements of the defence industry, but as the chances of victory improved the Soviet government also began rapidly to restore its peacetime industries, raising the priority of housebuilding and civilian capital construction.

Civilian consumption (including nondefence government consumption) is a residual in table 8, and may be understated by neglect of nonfarm households' subsistence activity on the output side. The meaning of the figures shown for total consumption per head is not easy to ascertain in the absence of good population figures, but consumption per worker can be derived from figures for total employment in the nondefence sector. A note to the table indicates that by 1942 consumption per worker had already fallen to 60 per cent of 1940. The further sharp decline in 1943, despite stability in the total of resources available for civilian use, is attributable partly to recovery of numbers in nondefence employment, and partly to the renewed pressure of investment. (The composition of civilian consumption also varied, with consumer industries and services recovering, but per capita food supplies probably deteriorating through 1944.) In table 8 this further information is used to estimate the annual breakdown of total civilian consumption between the amount required to

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[42] Calculated from Richard Moorsteen, Raymond P. Powell, The Soviet Capital Stock, 1928-1962 (Homewood, Ill.: Irwin, 1966), 622-23.

maintain consumption per worker at the minimum level registered in 1943 (when starvation deaths were already widespread), and the amount surplus to this requirement in each year.

The above tells us just barely enough about government preferences and the policy context to allow a rough simulation of "what might have happened" to the overall Soviet resource balance in the absence of aid. For this purpose (table 8, part (B)), net imports must be set at zero; under the hypothesis of no foreign aid, total absorption cannot rise above GDP. Under the given assumptions, it is suggested that defence outlays would have fallen short in each year by about 50 per cent of the cutback in total resources available.

The other 50 per cent shows up in a decline in resources annually available for civilian use. The implications of this shortfall for investment and consumption appear to be different in each year. In 1942, gross investment was already slightly negative and could scarcely have fallen further; the impact of reduced resources for civilian use is assumed to have been felt by consumption, since consumption per employee in the nondefence sector still had some way to fall. In 1943, in contrast, I assume that consumption standards had reached a minimum; the reduction in civilian resources would therefore have mainly affected investment activity, which was beginning to recover. By 1944, even without foreign aid, there were sufficient resources for both investment and consumption to rise above their respective floors, and the burden is shared between them according to the procedure described in notes to the table.

The gains from aid, compared with the results of its hypothetical absence, are indicated in the table's right hand column as an increase in overall resources available (69.1 billion rubles), divided between defence outlays (33.7 billion rubles), gross investment (17.3 billion rubles), and civilian consumption (18.1 billion rubles).

This analysis is undeniably crude. The numbers, though apparently precise, do no more than illustrate the argument. Moreover they rest on significant assumptions of the ceteris paribus kind. They presume that, in the absence of aid, the Soviet domestic product would have remained the same; in fact, one of the major determinants of Soviet wartime GDP was the loss and gain of territory, so anything detracting from the quantity and quality of the Soviet war effort would certainly have also reduced the total output of the domestic economy. Quality, as well as quantity: the military effectiveness of a billion rubles laid out on Soviet defence was surely higher if the package included lend-leased means of transport, communication, and soldiers' kit. The absence of aid also implied substantial cutbacks of civilian consumption and investment. Without aid, gross investment would have remained negligible, resulting in a steady contraction of the capital stock available for use; this too would have forced Soviet GDP below actually achieved levels in 1942-44, with fewer resources then available for defence. Since there was a limit to the resources freed by cutting investment, living standards would also have been depressed below the levels actually encountered, which were already associated with widespread deaths from starvation. More starvation deaths amongst the working population would have forced an additional decline in domestic output.

These problems arise from the one-dimensional character of the counterfactual hypothesis employed, and define the numerical values shown as purely heuristic in character. But they do not modify the core proposition that the impact of western aid can only be understood in light of the overall objectives and constraints of the Soviet economy; aid did not simply add additional blocks of imported resources to a predetermined domestic allocation, but also influenced this allocation. Aid freed resources for civilian use, both for investment and consumption; however, it seems likely that the effect of these civilian uses was no more than to mitigate undernourishment of the population and depreciation of the capital stock. This was necessary and inevitable

given the high degree of domestic economic mobilization, the extreme deprivation of the civilian sector, and the consequent blurring of the distinction between front and rear.

THE TECHNICAL FORM OF AID

The proposition illustrated in table 8 makes no concession to the view that the material form of lend-leased commodities was significant for the outcome of the aid process. Western aid consisted of equipment in a broad sense (including weapons, machinery, vehicles, ships, means of communications, materials, and fuels), some for military and some for civilian use, and processed foodstuffs intended only for military use. To understand its impact, consider the Soviet workforce divided among soldiers, industrial workers, and farmworkers. All of these were equipment users, but only industrial workers were equipment producers. Everyone was a food consumer, but only farmworkers produced food. Moreover, while in the long run the Soviet economy could theoretically be organized to produce any kind of food product or equipment, the innovation of some kinds of high-technology processes and high-grade products would certainly have been very expensive given the Soviet economy's skill, technology, and management deficits, and was not an option in the short run.

Probably, western <u>equipment for military use</u> unambiguously increased the Soviet capacity to devote resources to the war effort at all stages of the war, and was directly reflected in enlarged defence outlays. There was no immediately available domestic capacity for serial production of reliable motor vehicles, communications equipment, and so on. The replacement of high-grade imports would have required large quantities of domestically produced low-grade horsepower and equipment; this would always represent an inferior option. For example, railway transport could not solve the problem of dispersal of supplies across a front line of combat from the railhead. Domestic horse-drawn

equipment and manpower could not create an offensive logistical capacity equivalent to motorized transport, partly because of slowness, partly because of the large supply multiplier attached to the requirements of horse and supply troops when advancing.[43] Imported American trucks, jeeps, field telephone systems, and portable radio sets were also complementary to Soviet equipment. Thus the import of western equipment for military use had a compound effect: it added to the quality of Soviet fighting power, made existing Soviet resources already committed to the war much more effective, and released at least some resources for civilian use.

It was important that aid resources arrived in a complementary package. High-quality imported vehicles without the high-grade imported fuels and fuel additives for their efficient operation, without the communication systems to enable coordination of highly mobile motorized infantry, without the ration packs to enable troops to subsist independently for days on the march, would have resulted in unused capacity and waste.

Other considerations probably applied also to imported western munitions, despite their poor reputation among Soviet fighting personnel. This poor reputation arose because western weapons were typically unsuited to combat conditions on the eastern front. British tanks were insufficiently rugged for climate, terrain, and the character of German opposition; British and American aircraft tended to be excessively sophisticated for ill-educated and untrained Soviet operators. Such weapons added little to Soviet fighting power, and for that reason were no substitute for Soviet-produced weaponry. (Having no civilian use, they were also no substitute for

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[43] On the increase in speed of movement with motorization of the Red Army when advancing, see Jones, The Roads to Russia, 233-34; on the railway burden of supplying the food and fodder requirements of horse troops, see Martin van Creveld, Supplying War: Logistics from Wallenstein to Patten (Cambridge: Cambridge University Press, 1977), 111-13.

Soviet-produced civilian equipment or consumer goods.) Probably imported weapons were reflected in increased ruble outlays on the war, and did not release Soviet domestic resources from the war effort. But they did not making Soviet fighting power more effective.

A different range of effects can be attributed to imported equipment for use in the economy. Industrial, power, and farm machinery imports released Soviet workers from equipment-making, and allowed their transfer to other equipment-using activities. Equipment-using here has a broad sense - soldiers used military equipment, munitions workers used industrial equipment to make weapons, and agricultural workers used farm equipment to make food. In principle, therefore, imported equipment released resources in any of these directions. What decided the outcome was the policy context in which, from 1942 onwards, additional resources were shared out first to the equipment users in the defence sector, then to food producers whose task was to secure minimum consumption levels. To the extent that both military priorities and minimum food norms had been achieved (which may only have meant that no one of great significance was starving), however, Soviet workers could be retained in equipment-making to the benefit of civilian investment objectives, including for the postwar period.

In the first stages of the Lend-Lease operation, a relevant constraint was the rate at which resources could be released from equipment making to equipment using. Since overall labour resources were limited, it was possible in the short run to import too many machines. Western observers commented fretfully on the often neglectful attitude of Soviet handlers of western equipment, sometimes left to rot on sidings and in marshalling yards. But the underlying reason was probably not ungrateful or careless indifference; instead, there was a lack of absorptive capacity. It was rational to allow imported machinery to rust if there was no factory accommodation available in which to install it, or workers to use it once installed. At this stage of the war,

contrary to common perceptions, the Soviet economy needed overall resources more than it needed Lend-Lease dollars, which could not be utilized effectively under the circumstances.[44]

Imported processed foodstuffs, largely in tinned or concentrated forms, were intended solely for military use. This increment to food resources clearly released domestic food supplies for civilian use, and prevented overall nutritional standards from falling further. To the extent that minimum standards had been achieved, however, then farmworkers could be released for other equipment-using employment - military service, or equipment-making for industry and the military. Moreover, since agricultural work was of very low productivity by 1943-44, in ruble terms far below that industrial workers, especially in engineering and munitions, the transfer of workers from farm to factory could significantly affect total output.[45] To the extent that military needs were satisfied, capital investment gained.

The importance of lend-leased equipment for the Soviet capital stock and postwar reconstruction has received some attention. Some light was shed on this topic when, in 1946, Voznesenskii reported the results of a Gosplan investigation into the cessation of Lend-Lease, undertaken in response to war cabinet instructions of the previous summer. He concluded that while, in many branches, domestic shortages of previously lend-leased commodities would be automatically compensated by a reduction in the requirements of war production, a number of persistent shortages would require special attention. The "deficit" commodities, including iron

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[44] A classic treatment of this problem is the "two-gap" model devised by H.B. Chenery, A.M. Strout, "Foreign Assistance and Economic Development", American Economic Review, **50** (1966), 679-733.

[45] Mark Harrison, "Soviet Production and Employment in World War II: a 1993 Update", University of Birmingham, Centre for Russian and East European Studies, Soviet Industrialisation Project Series, no. 35 (1993), table 3.

and steel products, nonferrous metals, chemical and rubber products, paper, equipment, food products, and aircraft fuel, are listed in table 9, which illustrates the quantitative dependence of Soviet industry on imported supplies under each heading in 1944.

Dependence of the Soviet economy on external machinery supplies in this period has been emphasized recently by Khanin. He has suggested that between 1941 and 1950, two fifths of gross investment in the stock of Soviet metal cutting machine tools was derived from imports comprising lend-leased supplies and postwar reparations.[46]

AID AND INTER-ALLY SPECIALIZATION

By comparison, the inter-Ally dimension of wartime aid is easier to grasp. Was aid a subsidy from rich to poor, or an instance of resources shared among equal partners? Wartime governments naturally tended to emphasize the latter. It suited equally the Anglo-American desire to cement the USSR into a temporary union of strange bedfellows, and Soviet national feeling. Nor were the ideas of pooled resources and effective collaboration merely rhetoric. There was a real, practical logic at work, expressed in the division of labour among the Alliance partners. Within the alliance the wealthy, capital-abundant United States economy specialized relatively in the production of capital-intensive commodities such as weapons and machinery, high-grade materials and fuels, and high-grade concentrated and long-life processed foods. The Soviet Union continued to produce a broad range of military and civilian goods and services, but, relative to the Allies, specialized in the labour-intensive activity of fighting. The UK occupied an intermediate position, supplying weapons to Russia in the early stages of the war on the eastern front, but meanwhile receiving food, fuel, and machinery from the United States;

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[46] G.I. Khanin, Dinamika ekonomicheskogo razvitiya SSSR (Novosibirsk: Nauka, 1991), 265.

eventually, American supply reached a scale sufficient to release significant British labour resources for the invasion of Europe from the west.

In principle, to the extent that the pattern of specialization followed a common Grand Strategy of the wartime Allies, each of the countries in receipt of American aid could have claimed a counterbalancing "export" credit item based on the supply of military services to the Alliance as a whole, matching the American contribution of machinery and matériel. Alan Milward has suggested that "in those cases where British tank crews had used American tanks it would make at least as much sense to charge the United States for the crew as the United Kingdom for the tank".[47]

In practice, of course, no such crediting took place. One suspects it was not just an accident of peacetime accounting conventions that the result appeared to show Britain and the USSR as in receipt of a large subsidy. For one thing, any alternative would have involved the distasteful business of costing the expenditure of British and Russian human effort (on current account) and lives (on capital account) in the same currency as machinery and fuel. It would have meant an explicit recognition that the Alliance had chosen "rationally" to spend life most carelessly where it was cheapest. That this was indeed the tendency in World War II is suggested by the following figures.[48]

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[47] Alan S. Milward, War, Economy and Society, 1939-1945 (London: Allen Lane, 1977), 351; see also Peter Howlett, "The Wartime Economy, 1939-1945", in R. Floud, D. McCloskey, eds, The Economic History of Britain Since 1700, **3** (forthcoming, 1993).

[48] This was not a deterministic rule, however. Japan and Italy, both poorer than Germany, suffered less heavily. GDPs per head are from R.W. Davies, Mark Harrison, S.G. Wheatcroft, eds The Economic Transformation of the Soviet Union, 1914-1945 (Cambridge: Cambridge University Press, 1993), table 2 (Harrison); war losses and prewar populations are from B. Urlanis, Wars and Population (Moscow: Progress Publishers, 1971), 295, except USSR from Davies, Harrison, Wheatcroft, The Economic Transformation, 000 (Davies, Wheatcroft).

	GDP per head, 1940 (international dollars and 1980 prices)	Excess war deaths (per cent of prewar population)
USSR	1,440	15
Germany	3,190	9
UK	3,980	0.7
USA	4,970	0.2

Later, Soviet historians noted Truman's candid admission that Lend-Lease dollars were aimed at saving American lives: every Russian, British, or Australian soldier who went into battle equipped by means of American aid reduced the danger to young Americans.[49]

For another reason, despite the rhetoric of Allied collaboration and the pooling of resources, there was never any doubt as to the national "ownership" of national military personnel. If, even on the western front, the command structures of the British and American forces were merged only at the highest level, in the east the coordination of Soviet with Allied military action was fragile in the extreme. It would have been no technicality or matter of indifference to leaders of the United Nations whether Soviet troops had operated with lend-leased American equipment, but under Soviet command, or had themselves been lend-leased to some multinational UN force.

In the end, therefore, it suited everyone to talk about mutual specialization and the pooling of resources, but in practice to account for resource transfers as aid and trade favouring the poorer countries of the Alliance. Both British and Soviet accountants dealt with the resulting ambiguity (aid as pooled resource, or as subsidy) by means of a common device; they accepted Lend-Lease, treated it as hidden revenue to the budget, and incorporated it in their own military spending totals.

Nonetheless, it seems that Allied aid to the USSR made possible the division of labour which won the war. Without it, everyone on the side of the Allies would have had a

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[49] Cited in Istoriia Vtoroi Mirovoi voiny, **12**, 186.

worse war. The Russians would have had to fight on their own resources, which were inadequate in quantity if not in quality as well, and would have fought less well, maybe only to a stalemate. The British and the Americans would have had to fight harder, because they would have had to take on a larger share of the killing of Germans and being killed by them; they would have had to choose either fighting with the same bitterness and intensity as the Russians, or accepting stalemate in the west. Perhaps, in 1942 and 1943, in place of surrogate combat for the few in the night skies over German cities, they would have had to choose combat for the many in the killing fields of Kent and Sussex; perhaps the required bitterness and intensity would have been supplied by an occupation regime on the south coast, with concentration camps in Kent, and corpses hanging from telegraph poles in Wiltshire villages.

CONCLUSIONS

Even now when the archives are becoming more accessible, there is no "true story" waiting to be uncovered among dusty documents, which will tell the world just how Lend-Lease was spent in the Soviet Union. Identification of the resources released by aid remains a matter for theoretical reasoning and scholarly conjecture, and will not be found in any auditor's report.

It remains no more than a plausible suggestion that 50 or so cents in every Lend-Lease dollar were reflected in increased Soviet defence outlays. But to the extent that the technical form of lend-leased goods for military use increased the military effectiveness of Soviet defence outlays as a whole, 50 cents in the dollar understates the direct impact of Lend-Lease.

The other 50 cents went, under assumptions reviewed above, to underpinning the bare subsistence of the working population, and to investment in maintenance of inventories and the fixed capital stock. Whatever the true proportions of its utilization, aid must certainly have freed some

resources for civilian use, both for investment and consumption; this was necessary and inevitable given the high degree of domestic economic mobilization, the extreme deprivation of the civilian sector, and the consequent blurring of the distinction between front and rear. In the last stages of the war, continued Allied aid may have freed some resources for postwar reconstruction. But there is a strong possibility that civilian resources were already too constrained for aid to do much more than avert further deterioration in both the working population and the capital stock.

Aid to the USSR contributed to the mutual specialization of the Allies according to the comparative advantage of each. This specialization made sense in so far as it allowed everyone to do what they were good at. The western powers could specialize in the serial production of sophisticated weapons, and in using them to fight at a distance, while the Russians could get on with combat at close quarters. This pattern was nonetheless perceived as burdensome on each side, since the qualitative differences of role were not felt to be mutually compensating. The British, and still more the Americans, resented the Russians' economic dependence, their official presumptions of moral superiority, and lack of official gratitude. The Russians resented the way their richer partners used their wealth to help the Russians to kill and be killed.

Here were the roots of mutual suspicion - the potential use and abuse of aid by both donors and recipients for purposes which had less to do with winning the war than with civilian and postwar objectives. Was Lend-Lease used in the Allied interest, substituting young Russian lives for those of Britons and Americans? Was it exploited by the Russians for civilian as well as military purposes, to serve postwar as well as wartime objectives? The answer to both these questions is, realistically, yes. But Allied aid was also, nonetheless, an effective "Weapon for Victory", and there

was no good alternative to it under the constraints of the time. Without it, everyone would have had a worse war. The western Allies would have had to kill and be killed in greater numbers. The Russians would have done less killing and more being killed. The tensions were simply inherent in the aid relationship, as the history of postwar development aid will amply testify.

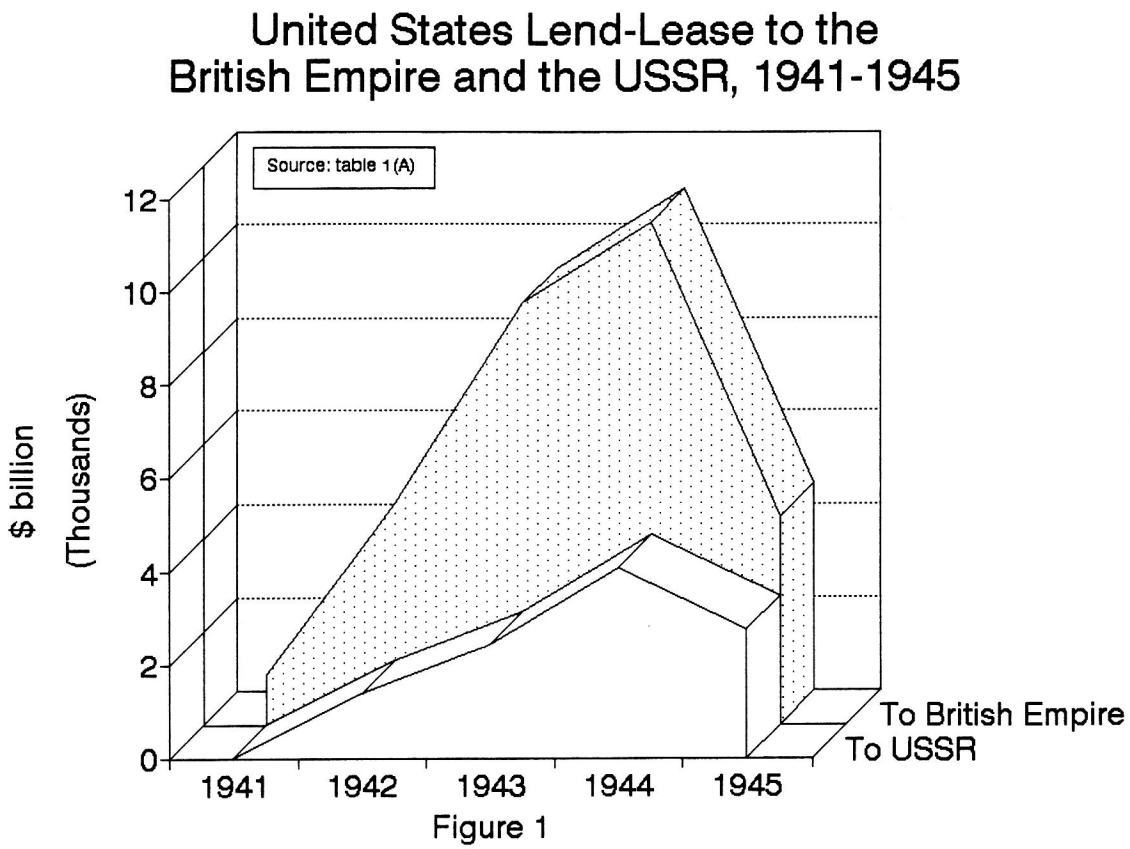
United States Lend-Lease to the
British Empire and the USSR, 1941-1945
Source: table 1 (A)
$ billion
(Thousands)
12
10
8
6
4
2
0
1941
1942
1943
1944
1945
To British Empire
To USSR

Figure 1

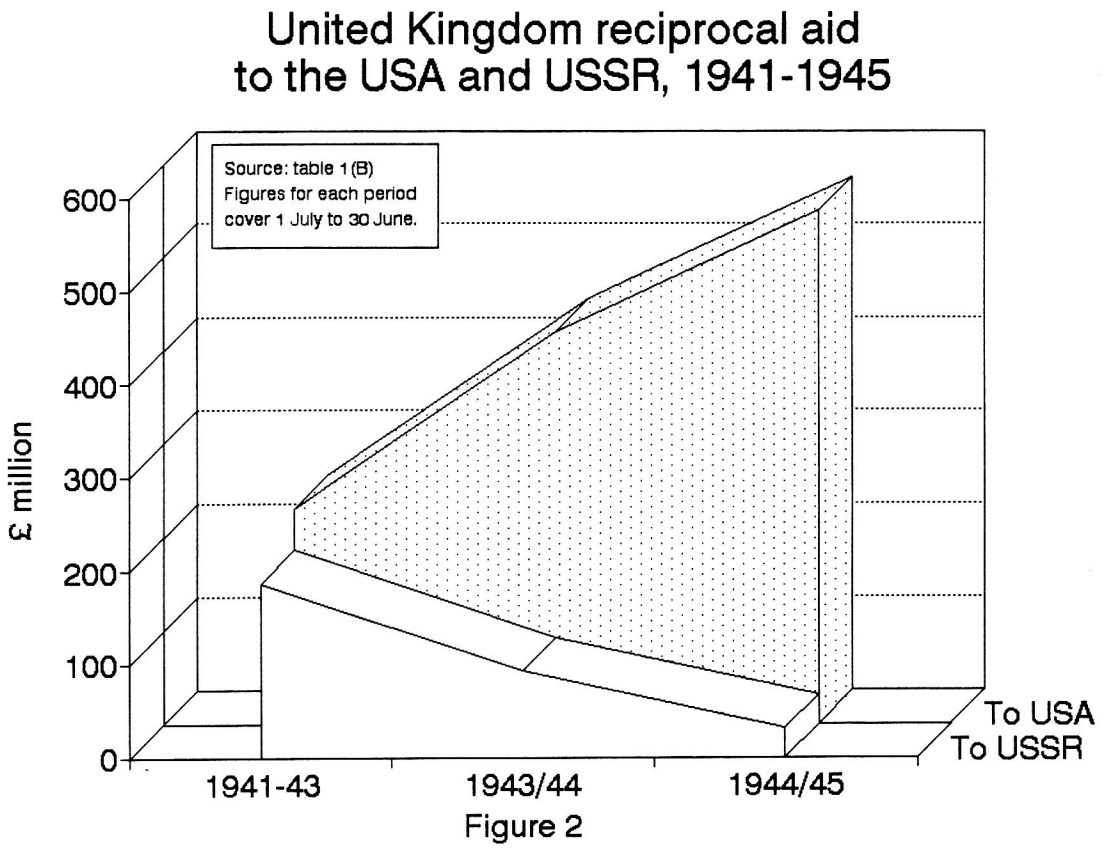
United Kingdom reciprocal aid
to the USA and USSR, 1941-1945
Source: table 1 (B)
Figures for each period
cover 1 July to 30 June.
£ million
600
500
400
300
200
100
0
1941-43
1943/44
1944/45
To USA
To USSR

Figure 2

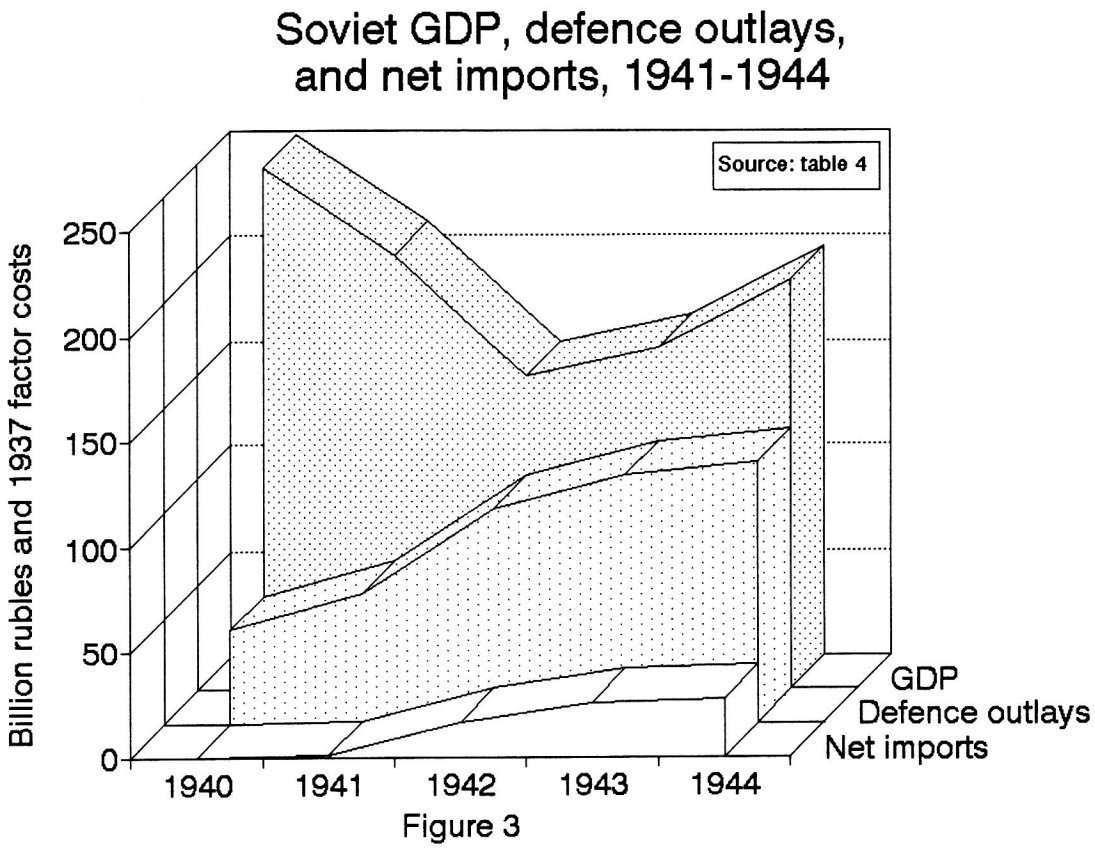
Soviet GDP, defence outlays, and net imports, 1941-1944
Source: table 4
Billion rubles and 1937 factor costs
250
200
150
100
50
0
1940
1941
1942
1943
1944
GDP
Defence outlays
Net imports

Figure 3

Table 1. Allied aid, total and to the USSR, 1941-1945

(A) United States Lend-Lease ($ million)

	1941	1942	1943	1944	1945	Total	(%)
To:							
British Empire	1082	4757	9031	10766	4437	30073	69%
USSR	20	1376	2436	4074	2764	10670	24%
Other	..	..	..	..	..	2872	7%
Total	..	..	..	..	..	43615	100%

(B) United Kingdom reciprocal aid (£ million)

	To June 1943	July 1943 to June 1944	July 1944 to Sept. 1945	Total	(%)
To:					
USA	229.7	420.9	550.6	1201.2	63%
USSR	187.7	93.3	31.0	312.0	16%
Other	..	..	..	382.8	20%
Total	..	..	..	1896.0	100%

Source: R.G.D. Allen, "Mutual aid Between the US and the British Empire, 1941-1945", Appendix 3 of R.S. Sayers, Financial Policy, 1939-1945 (London: HMSO, 1956), 529, 535.

Table 2. Monthly Lend-Lease shipments to the USSR, 1941-1945 ($ million)

Quarter	1941	1942	1943	1944	1945
I	0	167	584	805	664
II	0	344	536	855	707
III	0	355	758	945	0
IV	1	486	988	825	0
Total	1	1352	2866	3430	1371

Source: 1941-42, calculated from United States President, Report to Congress on Lend-Lease Operations, no. 14 (Washington, D.C.: U.S. Govt. Printing Office, 1944), 58; 1943-45 from no. 20 (1945), 49.

Table 3. Principal commodities in United States total exports, cash and Lend-Lease, to the USSR, 1941-1944 ($ million)

	1941	1942	1943	1944	Total	(%)
Military exports	30	724	1291	1060	3105	39%
Foodstuffs	1	165	524	505	1194	15%
Machinery	28	101	401	636	1166	15%
Vehicles and parts	13	114	65	316	508	6%
Iron and steel products	2	91	112	132	337	4%
Chemicals and products	2	23	59	108	192	2%
Wool cloth and dress goods	0	9	50	94	153	2%
Merchant vessels	0	15	92	32	139	2%
Copper and manufactures	2	31	40	57	130	2%
Rubber and manufactures	1	14	58	55	127	2%
Brass and bronze manufactures	1	29	39	52	121	2%
Aluminium and manufactures	1	18	36	61	116	1.5%
Inedible vegetable oils	1	7	34	49	92	1.1%
Leather and manufactures	4	22	15	46	88	1.1%
Petroleum and products	11	9	24	41	85	1.1%
Cotton manufactures	0	5	24	43	72	0.9%
Relief and charity goods	0	11	19	26	56	0.7%
Iron and steel advanced manufactures	1	7	16	16	40	0.5%
Freight cars > 10-ton capacity	2	0	2	29	33	0.4%
Scientific instruments	2	3	7	17	27	0.3%
All other commodities	5	27	81	85	197	2%
Total	105	1423	2990	3457	7975	100%

Source: United States Department of Commerce, "United States Trade with Russia (USSR) During the War Years", International Reference Service, 2, no. 41 (1945), 3.

Table 4. The burden of defence on Soviet resources, 1940-1944 (billion rubles and 1937 factor costs)

	1940	1941	1942	1943	1944
Absorption	247.7	206.9	165.4	187.9	221.4
GDP	247.7	206.1	149.3	162.4	193.9
Net imports	0.0	0.8	16.1	25.5	27.5
% of absorption	0%	0%	10%	14%	12%
% of GDP	0%	0%	11%	16%	14%
Defence outlays	44.3	61.9	101.3	117.7	123.1
% of absorption	18%	30%	61%	63%	56%
% of GDP	18%	30%	68%	72%	63%

Sources:
Absorption is GDP plus net imports. GDP and defence outlays are obtained in principle as by Mark Harrison, "Soviet Production and Employment in World War II: A 1993 Update", University of Birmingham, Centre for Russian and East European Studies, Soviet Industrialisation Project Series, no. 35 (1993), tables 1, 4; current revisions relate to new estimates for the production industries and defence procurement, and will be described in future work.

Revised figures for net imports are obtained as follows. The starting point is the evaluation of United States exports to the USSR (cash and Lend-Lease, as table 3) in 1944 made by Abram Bergson, The Real National Income of Soviet Russia Since 1928 (Cambridge, Mass.: Harvard University Press, 1961), 99n. These exports are classified under four headings to which I apply the purchasing power parities given below for conversion of US dollars of the war period to Soviet ruble factor costs of 1937.

	Per US dollar, factor cost rubles of 1937
Military goods	8.4
Machinery, etc	5.4
Vehicles, basic industrial goods	9.0
Consumer goods, food products	7.4

These parities are derived as by Bergson, except that (a) in the case of military goods the author's index of munitions prices (Mark Harrison, "New Estimates of Soviet Production and Employment in World War II: A Progress Report", University of Birmingham, Centre for Russian and East European Studies, Soviet Industrialisation Project Series,

no. 32 (1991), table G-2) is used to adjust Bergson's 1944 parity of 6 rubles/dollar to a 1937 basis; (b) for consumer goods and food products, "trade margins and extra processing costs" are ignored, and a further correction is made to convert prevailing-price rubles to factor cost rubles, assuming an average rate of turnover taxation in state and cooperative retail outlets of 90.6 per cent in 1937 (calculated from Bergson, Real National Income, 130), together yielding a parity of 7.4 factor cost rubles to the wartime US dollar rather than Bergson's 19 rubles.

Imports of non-US goods are accounted for only in terms of United Kingdom reciprocal aid (table 1) and trade, estimated freehand as follows: 1942 - $600m, 1943 - $400m, 1944 - $240m, and converted at the rate of 8 rubles of 1937 factor cost to the dollar suggested by Bergson, Real National Income, 100n.

Table 5. Revenues to the USSR state budget from foreign transactions, 1942-1943 (million rubles)

Quarter	I	II	III	IV
(A) 1942				
Planned, total	5000	4250	4000	3810
Lend-Lease	2000	2000	1500	950
import duties	3000	2250	2500	2860
% of Lend-Lease	150%	113%	167%	301%
Realized, total	1407	4405	2458	3764
Lend-Lease	1	852	363	2567
import duties	1405	3554	2095	1198
% of Lend-Lease	..	417%	577%	47%
(B) 1943				
Planned, total	..	..	4500	..
Lend-Lease	..	..	3900	..
import duties	..	..	600	..
% of Lend-Lease	..	..	15%	..
Realized, total	4082	4714	5964	..
Lend-Lease	3380	4100	5420	..
import duties	702	615	544	..
% of Lend-Lease	21%	15%	10%	..

Source: taken or calculated from Rossiiskii Gosudarstvennyi Arkhiv Ekonomiki (RGAE), formerly Tsentral'nyi Gosudarstvennyi Arkhiv Narodnogo Khoziaistva SSSR (TsGANKh SSSR), f. 7733, op. 28, d. 865, l. 9. "Realized" figures for 1943 (third quarter) are anticipated.

Table 6. Budget outlays of the USSR defence commissariat, 1941-1945, total and supplied from imports (billion rubles)

	1941 second half	1942	1943	1944	1945 first half
(A) Total outlays					
Munitions and equipment	14.0	33.2	38.6	42.5	21.1
Maintenance					
pay	9.2	26.2	31.9	34.8	20.8
food	8.2	21.4	25.1	25.3	9.0
personal kit	5.4	9.7	8.0	9.6	4.2
fuel	1.2	2.6	3.0	3.6	2.1
transport	1.1	2.3	4.6	5.6	2.6
Construction	2.3	2.1	1.2	1.6	0.7
Other	2.8	5.7	5.4	6.5	3.1
Total	44.3	103.0	117.9	129.4	63.5
(B) Imports					
Munitions and equipment	..	2.3	2.6	5.0	2.3
Maintenance					
pay	..	..	..	..	..
food	..	0.0	4.2	6.2	3.7
personal kit	..	0.3	0.2	0.9	0.6
fuel	..	0.0	0.4	0.9	1.0
transport	..	..	..	..	..
Construction	..	..	..	..	..
Other	..	0.1	0.1	0.2	0.0
Total	..	2.7	7.5	13.2	7.6

Source: RGAE, f. 7733, op. 36, d. 1892, ll. 75 (imports), 83 (outlays). Imported munitions and equipment include vehicles and parts. "Other" imports are horses. For imports in 1945 the calendar year is covered, not the first half. Navy items are excluded.

Table 7. Sources of USSR net material product (NMP) utilized, 1940-1945 (billion rubles)

	1940	1942	1943	1944	1945
NMP produced	385	329	415	453	475
Other sources	2	4	22	36	34
NMP utilized	387	333	437	489	509

Source: taken or calculated from Gosudarstvennyi Arkhiv Rossiiskoi Federatsii (GARF), formerly Tsentral'nyi Gosudarstvennyi Arkhiv Oktiabr'skoi Revoliutsii SSSR (TsGAOR SSSR), f. 3922/4372, op. 4, d. 115, ll. 10-15. An accompanying report (ll. 40-42) states that the excess of products utilized over domestic supply in 1945 is partly covered by "about 25 billion rubles" of imports, compared with 40 billion rubles of imports in 1944.

Table 8. The Soviet defence burden in the presence and hypothetical absence of aid and trade, 1942-1944
(billion rubles and 1937 factor costs)

	1942	1943	1944	Total	Gain (A-B)
(A) Actual					
GDP	149.3	162.4	193.9	505.6	0.0
Net imports	16.1	25.5	27.5	69.1	69.1
Absorption	165.4	187.9	221.4	574.6	69.1
Defence outlays	101.3	117.7	123.1	342.1	33.7
Civilian outlays	64.1	70.2	98.3	232.6	35.4
gross investment	-2.9	20.5	25.6	43.2	17.3
consumption	67.0	49.7	72.7	189.4	18.1
minimum	47.6	49.7	58.3	155.6	0.0
surplus	19.4	0.0	14.4	33.8	18.1
(B) Hypothetical					
Absorption (GDP)	149.3	162.4	193.9	505.6	..
Defence outlays	93.4	105.3	109.7	308.4	..
Civilian outlays	55.8	57.1	84.2	197.2	..
gross investment	-2.9	7.4	21.4	25.9	..
consumption	58.7	49.7	62.8	171.2	..
minimum	47.6	49.7	58.3	155.6	..
surplus	11.1	0.0	4.5	15.6	..

Sources:
(A) Actual absorption (GDP plus net imports) and defence outlays are from table 4. Civilian outlays are total absorption less defence outlays, and are divided into gross investment and consumption. Gross investment is from Richard Moorsteen, Raymond P. Powell, The Soviet Capital Stock, 1928-1962 (Homewood, Ill.: Irwin, 1966), 358, and Raymond P. Powell, "The Soviet Capital Stock and Related Series for the War Years", in Two Supplements to Richard Moorsteen and Raymond P. Powell, The Soviet Capital Stock, 1928-1962 (New Haven, Conn.: Yale University, The Economic Growth Center, 1968), 21. Consumption (including nondefence government consumption) is the residual.

For purposes of further computation, civilian consumption can be expressed in rubles, at factor costs of 1937, per head of the population in nondefence employment (i.e. excluding Army and Navy personnel, calculated from Mark Harrison, "Soviet Production and Employment", table 2 (row 13, less row 7.1), with 1940 shown on the same basis as other years), as follows:

	1940	1942	1943	1944
Consumption per worker in the nondefence sector	1978	1217	865	1078

The lowest figure of the series (that shown for 1943) is taken as some kind of absolute minimum. Multiplied by nondefence employment in each year, this yields the row labelled "minimum" total consumption. Resources actually (or below, hypothetically) used for consumption above this level are shown as "surplus" consumption (zero in 1943).

(B) Hypothetical absorption is taken as equal to actual GDP (net imports are set at zero). Defence outlays are calculated hypothetically as actual outlays, less the reduction in resources available (actual net imports) multiplied by the marginal response of actual defence outlays to actual absorption, 1942-44, found as follows.

(a) The marginal response of defence outlays to absorption, 1942-44, is estimated at . . .	0.49
(b) based on the total excess of defence outlays in 1943 and 1944 combined, over the 1942 level (billion rubles) . . .	38.3
(c) divided by the total excess of absorption in 1943 and 1944 combined, over the 1942 level (billion rubles) . . .	78.6

Civilian outlays (total absorption, less defence outlays) are divided hypothetically between gross investment and consumption as follows. In 1942 gross investment could hardly have fallen further, so the remaining burden of reduced resources in 1942 is shown in reduced "surplus" consumption. In 1943, on the other hand, "surplus" consumption was already zero, but gross investment had begun to recover, so the remaining hypothetical burden is shown as having fallen on gross investment. In 1944 the burden is distributed between gross investment and "surplus" consumption as follows. Hypothetical gross investment is taken as actual investment, less the reduction in resources available (actual net imports) multiplied by the marginal response of actual gross investment to actual absorption, 1943-44, derived as follows.

(a) The marginal response of gross investment to absorption, 1943-44, is estimated at . . .	0.15
(b) that is, the change in gross investment in 1944 over 1943 (billion rubles) . . .	5.1
(c) divided by the change in absorption in 1944 over 1943 (billion rubles) . . .	33.4

Hypothetical civilian consumption in 1944 is determined as a residual.

Table 9. Commodities in short supply, 1946: Lend-lease deliveries in proportion to Soviet domestic output, 1944, by physical volume
(per cent)

Iron and steel	
rolled steel	8.1%
ordinary	16.5%
high-grade	3.9%
tubes (wire, solid-drawn, pipeline)	16.4%
metal fabricates	22.0%
Nonferrous metals	
lead	40.0%
tin	28.6%
cadmium	66.0%
wolfram concentrate	51.7%
molybdenum concentrate	81.3%
Chemicals	
caustic soda	32.0%
phenol	45.0%
dibutyl-phthalate	50.0%
methanol	33.5%
Rubber products	
conveyor belts	39.2%
transmission belts	48.5%
natural rubber	100.0%
Paper	50.0%
Equipment	
press-forging equipment	..
lifting equipment	..
excavating equipment	..
complex machine tools	..
Food products	
meat products	33.0%
animal fats	58.0%
Aircraft fuel	37.0%

Source: GARF, f. 3922/4372, op. 4, d. 7, ll. 173-78.