

The Soviet Market for Weapons*

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Abstract. Military markets display obvious inefficiencies under most arrangements, but that of the Soviet Union was unusual for its degree of monopoly and exclusive relationships between buyer and seller. This presented a particular problem for the quality of weapons. The present chapter analyses the problem of quality in terms of an issue that is well-known in market economies, the hold-up problem. When A has had to make a prior commitment to a relationship with B, B can "hold up" A for the value of that commitment. This roughly describes the power of Industry over the Army in the Soviet defense market. The normal use that Industry made of this power was to default on quality. The Army's counter-action took the form of deploying agents through industry with the authority to verify quality and reject substandard goods. The struggle ended not in victory for one side but in a compromise.

We introduced Chapter 3 by noting that, in all countries, markets for military goods work poorly. This is to a large extent independent of the constitution of the state and the social and economic system. In all countries, whether ownership is private or collective, and whether rulers are democratic or authoritarian, the agents on each side of the defense market are powerful and well connected. On one side a senior minister manages a government monopsony: there is only one significant customer for such items as heavy artillery, aircraft, and battleships. On the other side is a charmed circle of big defense contractors. A few large-scale corporations supply such weapons; their ability to squeeze money out of government is augmented by the fact that they are too important for production,

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employment, and national security for the government to let them fail. As a direct result, defense markets everywhere are notorious for cost overruns, delayed deliveries, quality shortfalls, subsidies, and kickbacks.

It would be a mistake, however, to conclude that defense markets everywhere are *uniformly* the same. Just among the market economies, national arrangements have been shown to vary significantly in the degree of competition, public accountability, rent seeking, and “softness” of budget constraints on defense suppliers (Eloranta 2002, 2004). The Soviet market for military goods also shows several unique and fascinating features; despite the fact that both buyer and sellers were state-owned, so that it was only a “quasi-market” in the sense defined in Chapter 3, it supplied an army that won World War II and threatened the West for the next half century. Thus it is fully worthy of detailed study.

In writing about the market for weapons we do not mean that there was a market relationship between the Army and Industry as units. At this level there was no market exchange but a political relationship between the defense minister and a few industrial ministers. The market tended to emerge at lower levels (see Figure 3.7) where individual military purchasing administrations had to bargain in detail with individual defense factories. We suggest that the market had less scope to develop for products where models were established and were in serial production year after year so that each year’s contracts could be planned in advance on the basis of the previous year’s experience. But for many lines including aircraft, ships, tanks, and engines the Army was continually trying to place contracts for new or unique items. Innovation in military machine technologies seems to have been particularly rapid in the mid-1930s and this accelerated the year-to-year turnover of products (Davies and Harrison 1997). In such periods even the crudest version of directive planning was impossible because it was never clear beforehand who would produce them and how many, to what quality standards, or at what price. This greatly extended the scope for market-oriented behavior.

The most important problem in the Soviet military market was the quality of weapons. By “quality” we mean the observable characteristics of fabricated goods such as their reliability or performance. Both quantity and quality can be observed. But they differ in the ease with which each can be verified, or proved to a third party. Quantity is more easily verified, whereas verifying quality takes relatively much more time and effort.¹

The Soviet economy had a general problem with quality because, sheltered from competition and guaranteed economic survival by state plans, factory managers faced strong temptations to seek a quiet life for themselves and their employees by fulfilling the plan for least effort (Granick 1954; Berliner 1957).

¹ In this chapter we look at the problem that arises when quality is observed before purchase but cannot be verified: the buyer is aware of quality defects, for example, but cannot prove them to a third party. Markevich and Harrison (2006) have looked at the further problem that arises when quality is also costly to observe so that the buyer may not know the quality of what is bought until after purchase; this is also a common problem in defense markets.

The authorities assigned plans in rubles of gross output subject to fixed plan prices and quality specifications (*tekhnicheskie usloviia*). Quality, however, was costly to the producer. As we now know, virtually everything in the Soviet command system that appeared fixed was negotiable in practice, including plans and prices. Once plans and prices had been written down, however, the main scope for the factory to economize on effort lay in finding ways to reduce quality that were hard to verify. Immediately upon transition to the command system, a rapid deterioration in product quality began that was eventually halted and reversed only with great difficulty (Davies 1989: 88-89, 313-14, and 384-85; 1996: 108, 394-95, 404, and 484).

In the hope of limiting such producer opportunism the authorities relied firstly on industrial self-regulation. Thus, every factory had its own quality department or OTK (*otdel tekhnicheskogo kontroliia*) responsible for ensuring that its products came up to standard. Not surprisingly, this was largely ineffective: managers had little incentive to make self-regulation stick, and the staff employed to carry out quality assurance typically saw themselves as low-status employees paid to provide a fig-leaf to cover up for management when things went wrong; when they tried to work professionally to external benchmarks, managers slapped them down.²

Above the factory level, the ministers in charge of the supply of military goods had to account for their quality to Stalin and this forced them to care about quality; periodically, at least, they said that they did. When they spoke up for quality, they often made inspirational speeches and issued decrees about the enforcement of standards and benchmarks that were accompanied by fearsome threats of punishment for violation. In practice, however, the ministry had its own plan to fulfil; conscientious adherence to quality standards could threaten not only the incomes of workers and managers but also the authority and prestige of the minister. If the minister was for *quality* before the event, then after the event *quantity* became the important thing and quality was allowed to slide unnoticed.

What means were available for the Soviet buyer to bring independent pressure to bear upon a poor-quality supplier? Under Soviet legislation of 1929, strengthened in December 1933 and July 1940, factory managers became criminally liable for negligence in relation to product quality. The problem lay not in the law but in its enforcement; in 1939, for example, the decree of December 1933 was already a dead letter (Solomon 1996: 144-47). The buyer could also claim a refund and seek damages through the civil arbitration courts. The buyer's expected gain was limited, however, by two factors: the procedure was time-consuming, and it opened up the buyer to retaliation by the seller in the future. This limited the buyer's expected gain from appealing to higher authority.

By focusing on the problem of quality we do not mean to imply that the Red Army's military equipment was not good enough to fight wars and win battles.

² Harrison and Simonov (2000) and Markevich and Harrison (2006) discuss industrial quality self-regulation at the factory and ministerial levels in more detail, including the interests of and positions adopted by the industrial ministers themselves.

The quality of weapons has both economic and military aspects that are conceptually distinct, although practically related. The economic aspect of quality decides whether the equipment creates producer and consumer surpluses sufficient for both buyer and seller to be willing to agree the terms of an exchange beforehand and remain satisfied with the results afterward. The military aspect decides whether the buyer can use the weapons to beat the enemy. In World War II, Soviet weapons such as the T-34 tank, BM-13 “Katiusha” rocket mortar, and Il-2 assault aircraft won a reputation for rugged serviceability and firepower. Militarily, they were good enough. This does not mean that they always performed according to contract. This chapter is about the economic aspect of quality: on what terms was Industry willing to provide it, and did the Army get what it paid for? This is an important problem because, even if the weapons were militarily “good enough,” it determined the price that had to be paid to get them.

This chapter is organized as follows. In Part 1 we set out a framework for analysing the problem of quality in military markets, in which Industry “holds up” the Army for gain. Part 2 describes the main solution that the Army adopted, that of deploying its own supply enforcement agents throughout Industry. Part 3 describes these agents’ daily work, which brought them into frequent conflict with the industrial suppliers. Part 4 describes the result, which was a compromise over both the quantity and quality of goods accepted. Part 5 concludes.

The Hold-Up Problem in Defense Industry

The “hold-up” problem provides a way of understanding quality issues in the Soviet market for weapons. A hold-up can arise wherever one partner must invest in an exclusive relationship with another in order to realize the benefits of a potential exchange.³ Think of a market in which a buyer and a seller have an exclusive relationship. The exclusivity can arise on either side or both sides at once. On one side, the seller might have to invest in costly specialised equipment to meet the needs of the buyer. On the other side, the buyer might have to invest effort in order to identify and select the seller, which is also costly. These costs bind them together.

Suppose the seller acquires a specialized machine for a fixed cost F ; the machine must be worth at least F to the seller in relation to the buyer since otherwise it would not be bought. Having bought it, the seller stands to lose the difference between its value inside the relationship and its resale value R if the relationship should fall apart. Thus, the relationship itself is worth at least $F - R$ to the seller, once the machine is bought. A buyer also makes an investment by spending S on selecting the seller; alternatively, S is the cost of switching to another seller if the initial relationship breaks down. So the relationship with the seller is worth at least S to the buyer, and this is what the buyer stands to lose. By investing in their joint relationship seller and buyer gain access to a “quasi-rent,”

³ Goldberg (1976: 439) provides the original formulation; see also Williamson (1985: 61-63).

or benefit that exceeds the short-run opportunity cost of the assets concerned. In this case it equals the difference between the profit on their investments that arises inside the relationship and what these could earn outside; the total quasi-rent to be shared between the two is at least $(F - R) + S$.

How will it be shared? The actual distribution of the gain is subject to post-contract bargaining. The seller can hold up the buyer: by threatening to withdraw from the relationship, the seller can face the buyer with a potential loss at least equal to S so the buyer should be willing to pay the seller up to S to avoid this loss. Similarly the buyer can hold up the seller, who should be willing to pay up to $F - R$ to keep the buyer in the relationship. The outcome will depend on the relative bargaining strengths of the two sides; the party with more to lose is more likely to lose it.

The risk presented by the hold-up problem is that, in order not to be held up and so make a loss, agents will avoid investing in the relationship-specific assets that make them vulnerable; as a result, society as a whole will lose the gains from trade. The hold-up problem is not without standard solutions, however, that should bring the incentives of the buyer and supplier back into alignment (Williamson 1991; Schmitz 2001). One is vertical integration, which brings the parties together under a single authority and completely replaces their market relationship by hierarchy. There are also intermediate solutions that retain the market relationship but regulate it by long-term contracts with some combination of joint financing of initial joint costs and contingent rules for distributing the subsequent benefits.

Defense markets are generally thought to have a potential for hold-up problems (Rogerson 1994). First, there is an exclusive relationship, with only one buyer and little room, perhaps, for more than one supplier. Second, the relationship requires both sides to invest in it before gains can be realized. The Army must invest in selecting its suppliers and securing their goodwill; if the relationship breaks down it must start again, so its investment will be lost. Similarly, Industry's firms must acquire the specialized capital assets required to produce the particular items that the Army alone wants; if the relationship breaks down these specialized assets will be less valuable in their best alternative use. Thus, both sides have something to gain and something to lose, and the result is that each can be held up by the other.

In the Soviet case the hold-up problem was one-sided. First, Soviet firms generally did not pay for capital goods which were free of charge to the user, the cost to society being met by grants from the state budget.⁴ If we consider only the financial aspect of F , the price of the firm's specialized capital assets, then F was

⁴ At the end of the 1980s the U.S. department of defense was doing the same for a substantial proportion of private-sector defense-related investment and R&D expenditures in order to overcome defense contractors' fears of being held up by the government, according to Rogerson (1994: 67-68). During World War II, for the same reason, the U.S. Defense Plant Corporation and other federal agencies provided and afterward wrote off capital facilities for war production to the private sector that Robert J. Gordon (1969) valued at \$45 billion (at 1958 prices).

zero. Their true cost to the firm was higher than this because it had to negotiate capital grants with higher authority, and this took time and effort and required the expenditure of goodwill (Berliner 1957).⁵ At the same time R was often low and uncertain since there was no formal secondary market in machinery, although it is true that informal trades did take place. As a modest simplification, suppose $F - R = 0$. This weakened the hand of the Army and eliminated the scope for it to gain by holding up Industry.

Industry could still hold up the Army, however, as long as the Army faced positive switching costs S . It seems likely that this was less of an issue for established products that did not change from one year to the next. Once suppliers and their capacities were known from experience they could be written into plans, and this limited their bargaining power. More important for us is the case where the Army needed a fresh source for a new product and had to expend resources on selecting the supplier and negotiating a deal. In Chapter 4 Andrei Markevich has described how the Army was forced to wage a frustrating “contracts campaign” in order to place new orders with industrial suppliers each year. In an earlier study Harrison and Simonov (2000: 231) identified major obstacles as “the difficulty of finding willing suppliers of new defence products, and the desire of industry to secure a relatively homogenous assortment plan which would allow concentration on long runs of main products without a lot of attention to spare parts and auxiliary components, no matter how essential to the customer”; the resistance of Industry could go so far as to leave significant orders completely unfilled. We conclude that switching costs left the Army vulnerable to a hold-up.

Given this, what form of hold-up should we expect? Under Soviet arrangements, once higher-level plans had been issued and contracts agreed, the main opportunity for Industry lay in undershooting on quality, knowing that the Army could not take its business away. We illustrate this with an example that has three stages: a contract, the hold-up, and readjustment. Suppose the Army has a fixed budget of 100,000 rubles that it is willing to exchange with Industry for a particular gun. This gun is available in lookalike versions of two different qualities, “low” and “high.” Industry reports to the Army that in the low-quality version the gun will cost 500 rubles but for high quality it will cost a thousand. Officially Industry just needs to cover its costs, so if the Army pays 100,000 Industry will offer to deliver any mix of high and low quality that satisfies the condition (in thousands): $100 \geq 1 \times H = 0.5 \times L$, using H and L for the numbers of high and low quality respectively. In Figure 6.1 these relative costs are reflected in the gradient of the bold line labelled C, which gives the maximum amounts of either quality that Industry will write into a contract worth 100 thousand rubles; the line has a downward slope of $\frac{1}{2}$ because for every extra H in the contract Industry will offer two units less of L .

<Figure 6.1 here.>

⁵ In recent research Gregory and Lazarev (2002) have demonstrated how Soviet firms had to bargain for a specific class of capital goods: motor vehicles.

The Army is willing to pay a thousand rubles each for high-quality guns but would pay only 250 for the low-quality version; it will promise its cash for any combination that meets the condition (in thousands) $100 \leq 1 \times H + 0.25 \times L$. The fact that it values low-quality items below their production cost makes the Army willing to pay 100,000 provided that it receives *only high-quality items*. The thin line labelled V shows the combinations that the Army would accept as worth 100,000 and so embodies the Army's relative evaluation of guns of different qualities; it has a downward slope of $\frac{1}{4}$ because the Army would give up four L for every extra H in the contract. It touches Industry's offer line at the vertical axis, and this makes both parties just willing to trade; they will exchange a contract for 100 items of exclusively high quality at a thousand rubles each.

<Figure 6.2 here.>

Figure 6.2 shows the hold-up. After the event, Industry violates its contract; while sticking to the contract terms in quantity, it defaults on quality by following the arrow pointing southeast to x . The arrow has a downward slope of exactly 45° , meaning that Industry is substituting low-quality for high-quality guns, one for one. How far Industry can go is limited by the cost the Army would incur to select another producer. Suppose the Army's switching cost is 45,000 rubles. Then Industry can cut the value of its delivery to the Army by up to this amount before the Army will be tempted to break the contract. In this case, at x Industry mixes up to 60 low-quality guns with at least 40 of high quality, keeping the sum of units at 100 as in the contract, and so fulfilling the plan in quantity if not in quality. The Army must now pay 100,000 for 40 high-quality items worth 40,000 plus 60 low-quality items that it values at only 15,000, making its procurement worth only 55,000, so it has lost 45,000. The Army knows it has been cheated because quality is observable, but can do nothing about it since quality is not verifiable in the dictator's court; if it broke the contract, the Army would have to accept the equal or greater loss of having to find another supplier at short notice.

Once the Army learns to anticipate such losses, what can it do? The standard solutions listed above involve market regulation by long-term contracts or market suppression through vertical integration. In the Soviet context we see that the standard solutions could not apply. Stalin ruled out vertical integration of the Army and Industry because he did not want to encourage the formation of a powerful military-industrial complex. The historical record shows that military interests advocated integration with the defense industry, but Stalin opposed it and quickly ruled it out. In 1927 army commanders Tukhachevskii, chief of the general staff, and Unshlikht, a member of the Revolutionary Military Council, sought powers for the Red Army over appointments to the defense industry, plans and reports of defense producers, and plans for capital investment in the industry (Samuelson 2000: 42-47; see also Chapter 2). These proposals were rejected (Harrison and Simonov 2000: 230). Tukhachevskii's subsequent resignation as chief of staff was most likely prompted by the failure of his ambition to control the defense industry (Samuelson 2000: 55-59). As for Stalin's motivations, divide-and-rule was a basic mechanism on which he built his power and this included keeping soldiers and industrialists at odds (Harrison 2003).

An intermediate solution to the hold-up problem is long-term contracting. But again, this could not be applied in the Soviet context; the reason is that, as Andrei Markevich showed in Chapter 4, under Soviet rules all contracts were rewritten every year; no long term contract was worth more than the paper it was printed on. More formally, the dictator could not credibly promise to uphold long-term agreements between the Army and Industry for sharing the gains from trade since he clearly had the power to break any contract and could not bind himself.

<Figure 6.3 here.>

In the absence of other solutions, Figure 6.3 shows what may happen next. The important thing is that, at x , *the Army's loss exceeds Industry's gain*. This is because of the production of low-quality guns: it costs Industry 500 rubles to produce every low-quality item, but this is twice what they are worth to the Army. Thus the Army values the 60 low-quality guns it has received at only 15,000 rubles, but they cost Industry 30,000 rubles to produce, and the 15,000-ruble difference is a deadweight loss that benefits no one. As a result both parties could gain by raising quality. If they could agree to trade back along V' to the vertical axis, for example, Industry would cut its costs by another 15,000 without further loss to the Army, which would now receive only 55 guns, but all would be of high quality. Alternatively, trading back along C' would give the Army 70 guns, all of high quality, and cut the Army's loss to 30,000 rubles, without detriment to Industry whose costs would not change. Or they could agree to split the gain; the shaded triangle in the figure shows the scope for compromise and the arrow pointing northwest shows the direction in which it lies.

There is an obstacle, however. For Industry, the point of maintaining the combined amounts of $H + L$ at 100 was to avoid a verifiable contract violation. Anywhere else in the shaded area than at x , Industry will underfulfil the plan in quantity, and the violation will be obvious: total output will be up to 45 items short. The Army may wish to forego some of these items in order to get higher quality overall. The danger for Industry is that the Army can afterward denounce it to the dictator for breaking the contract, putting Industry's gain from the hold-up at risk. To eliminate the deadweight loss at x , Industry must bind the Army must not to denounce it afterward, and the Army must be willing to be bound. There has to be a mechanism for collusion: the Army must join a conspiracy that hides not only the original hold-up operation (the shift to x) but also the subsequent readjustment that restores quality at the expense of quantity. Otherwise, both sides must accept the deadweight loss at x .

In this chapter we will see how the whole thing worked in reality. The Army tried to reach across the market for weapons by deploying thousands of military engineers to the factories of the defense industry. These agents had a dual role. Their first duty was to prevent the Army from being held up and to enforce its contracts. They monitored the process of contract fulfilment with special regard to quality, and aimed to reject items for purchase when their quality fell below some threshold level. The work of the military agents made the quality of military goods more verifiable. When Industry sought to cut the supply of high-quality items, the Army sought to prevent their replacement by low-quality items, and

this opened Industry up to penalties for defaulting on quantity. In practice, however, the military agents and their superiors tended not to make trouble for Industry over quantitative shortfalls. This suggests that Industry's cooperation was available at a price: the Army had to accept shortfalls on quantity and help conceal them from the dictator's prying eyes.

The Military Agents

As the mixed economy of NEP gave way to the command system the Army had to face up to its adverse consequences. In 1930 a radical reform set the aim of achieving "a breakthrough in the work of industrial enterprises in fulfilling military equipment orders." The reform entitled the Army to appoint special military agents (*voennye predstaviteli*, *voenpredy*) to regulate procurement from Industry.⁶ The 1930 statute also defined the rights and obligations of Industry and the Army in relation to product quality. These were left largely unchanged in subsequent versions enacted in 1933/34 and 1939.⁷

The statute of 1939 charged the military agents in industry with "observance of the process of manufacture of military products . . . , the technical acceptance of finished items, and monitoring the enterprises' mobilization readiness."⁸ Their responsibilities included checking that production adhered to technological standards and that enterprises fulfilled their plans; they were obliged "to report to the Red Army chief of armament through the chief of the appropriate equipment [purchasing] administration" concerning all shortfalls in suppliers' fulfilment of military equipment orders: the use of substandard materials, shortages of raw materials and semi-manufactures for the enterprise, departures from approved processes and blueprints, poor work by the factory OTK, missed deadlines for military orders, and so on.⁹

To fulfil these obligations the military agents were endowed with rights of free access to the entire factory site at any time, day or night, and to all documentation relating to technology, production, and mobilization. The management was obliged to support the military agents with necessary accommodation and equipment. Faced with substandard products the military agents could halt acquisition and, if necessary, production; but they were

⁶ RGVA, 33991/1/65: 7-8 (1930). Harrison and Simonov (2000: 229), have described how this arrangement emerged from the prerevolutionary procurement system.

⁷ GARF, 8418/8/175, ff 10-14 (decree of the Council of Labor and Defence, November 28, 1933; decree of the ministries of defence and heavy industry, August 4, 1934); 8418/23/314: 1-5 (decree of the Defence Committee, July 15, 1939).

⁸ GARF, 8418/23/314: 2 (July 15, 1939).

⁹ RGVA, 33991/1/65: 11 (March 1930).

prohibited from doing so if the purpose was to exert pressure on the management. Managers had no right to interfere directly in the work of the military agents, but could appeal over their heads to higher authority. To protect their independence from management the military agents were paid only by the defense ministry and were prohibited from accepting rewards or benefits from the side of industry. Figure 6.4 illustrates the structure of agency that resulted.

<Figure 6.4 here.>

During the 1930s the numbers of military agents appear to have risen dramatically, and their qualifications also improved. Within the defense ministry, separate chief administrations for artillery, the air force, chemical weapons, and so forth dealt with the purchase of specialized equipment (see Figure 6.3). Each maintained its own military agents at suppliers. Two factors swelled their numbers. First, the agents themselves were serving officers, but the defense ministry also engaged civilian employees to support them. Second, an enterprise that supplied more than one purchasing administration of the defense ministry had to accommodate agents from each of them, and this also added to numbers. At 16 factories in Iaroslavl' in 1943, for example, a total of 144 agents worked on military acceptance, including 19 senior command staff, 30 middle ranking officers, and 89 hired employees. Some factories accommodated agents of up to five separate Army and Navy purchasing administrations.¹⁰

The growth of numbers employed as military agents is hard to judge because we lack global figures for the early period. At the beginning of 1930 one of the Red Army's purchasing administrations, that for military maintenance (*voenno-khoziaistvennoe upravlenie*), accounted for just 263 local procurement agents.¹¹ Numbers appear to have grown rapidly thereafter; by 1938 the total of military agents and their employees had reached two to three thousand, and more than 20,000 by 1940.¹² This growth probably reflected supply and demand. On the demand side the economy and especially its defense sector were expanding with exceptional rapidity (Davies and Harrison 1997). At first, demand outstripped supply; at the beginning of the decade skilled engineers were so scarce that recruiting standards had to be lowered to fill vacancies for military agents.¹³ In 1933 the government admitted that "the defense ministry acceptance staff do not

¹⁰ Hoover/RGANI, 6/2/49: 8 (July 7, 1943).

¹¹ RGVA, 47/5/207: 1 (1930).

¹² 1938: a document dated April 16 of that year (GARF, 8418/22/508: 6); gives the number of locally hired employees of military and naval agents as 1,695; the serving officers can hardly have exceeded this number. 1940: Harrison and Simonov (2000: 229).

¹³ RGVA, 33991/1/65: 1 (February 27, 1930).

measure up to their job descriptions.”¹⁴ Frequent military complaints about the shortage of agents and the amount of overtime they had to work, leading to poor control of quality and deadlines, persisted through the middle 1930s.¹⁵

Two factors eventually overcome this shortage. One was the expansion of Soviet higher education which greatly augmented the supply of professionally qualified personnel. The other is that more privileged terms of employment were established to make up requirements by recruiting skilled civilian personnel.¹⁶ In 1938 military agents’ pay was raised up to and subsequently beyond the level of Industry’s own quality staff; as numbers increased, their workload was also cut back.¹⁷

The turnaround in relative pay and conditions evoked notable resentment among those employed in industrial self-regulation of quality. In October 1947 a meeting was held in the ministry of armament for factory OTK officials. According to one speaker “a leading military employee [responsible] for a single product gets 1,400 to 1,500 rubles [monthly]. An OTK deputy [chief] for metallurgy in charge of 17 workshops gets 1,350 rubles and an OTK head of workshop gets 900 rubles. This pay gap ensures they get people with more skills, higher discipline, and better training since these are all associated with high pay.”¹⁸ Another gave the average monthly pay of OTK staff at his factory as 400 rubles including bonuses, while hired employees of the military agents got 600 rubles and the officers up to 2,000 rubles.¹⁹ A third compared wages in the OTK unfavorably not only with the earnings of the military agents but also with production workers’ pay. The basic pay for OTK workers equalled that of production workers, but the latter could expect large piece-rate bonuses whereas OTK staff got nothing for additional effort.²⁰

Industrial quality workers also complained about the military agents’ easy life. “Our team from the chief artillery administration comprised a lieutenant-colonel, a captain, and three hired staff. They needed 40 minutes to take ‘decisions’ and the rest of the time they could catch flies, sing songs, and undertake staff development.”²¹ This was not an urban myth; the Army considered it normal that “the workload of military product acceptance on military agents and their staff

¹⁴ GARF, 8418/8/175: 10-12 (November 28, 1933).

¹⁵ GARF, 8418/22/508: 8 (May 29, 1938).

¹⁶ GARF, 8418/8/175: 3 (August 4, 1934).

¹⁷ GARF, 8418/22/508: 1 (June 5, 1938).

¹⁸ RGAE, 8157/1/4105: 102 (Zvonarev, October 21, 1947).

¹⁹ RGAE, 8157/1/4105: 140 (Dovzhenko, October 21, 1947).

²⁰ RGAE, 8157/1/4105: 110, 112 (Koloskov, October 21, 1947).

²¹ RGAE, 8157/1/4105: 203 (Dul’chevskii, October 21, 1947).

does not exceed 50 percent.”²² The generally privileged position of the military agents would appear to have been important in limiting their corruptibility; as we report elsewhere (Markevich and Harrison 2006), we have found little evidence of bribery, and some evidence that such cases were exceptional.

Into Battle With Industry

In this section we analyse how the Army’s agents worked to enforce quality on Industry. Officially, the Army and Industry had common interests; disputes arose only because of “misunderstanding,” which could be overcome through procedures to identify and manage disagreements such as joint meetings.²³ In reality, however, “mutual relations of the factories with ministry of defense and [navy] representatives are unbearable.”²⁴ Underlying this lay the hold-up problem between the Army and Industry which gave rise to persistent antagonisms focused on the role of the military agent.

The mutual attitudes of managers and military agents can be illustrated from both sides. A defense industry manager spoke up for Industry in 1928: “Less regulation. It is our misfortune that they regulate us so much.”²⁵ Nearly a decade later, a shipyard worker told party activists: “the handover of vessels must be simplified. We are losing a lot of time doing unnecessary trials.” A military agent replied for the Army: the previous speaker “said that the trials are implemented in too much detail. But I say that detailed trials are essential . . . We have to eliminate all defects from the key items through exhaustive trials.”²⁶ Another military agent put it bluntly: “Don’t argue with us, just do what we say because we’re not making it up.”²⁷

Those who spoke for Industry typically accused military agents of incompetence and lack of realism. “There are good acceptance agents but there are also agents who don’t understand the things they are supposed to accept. How can someone be a good acceptance agent if they tell him to deal with soap today,

²² Hoover/RGANI, 6/2/49: 8 (July 7, 1943).

²³ “Common interests,” RGVA, 47/9/83: 102 (Budnevich, 1928); RGAE, 8183/1/146: 81 (Kudak, April 13, 1937). “Mutual misunderstanding” to be overcome through “joint meetings,” RGAE, 7515/1/403: 180 (Kulik to M. Kaganovich, February 7, 1938). Advocating “joint meetings” ten years previously, RGVA, 47/9/83: 96 (Dybenko, 1928).

²⁴ RGAE, 8183/1/146: 80 (Kudak, April 13, 1937).

²⁵ RGVA, 47/9/83: 30 (Penin, 1928).

²⁶ RGAE, 8183/1/146: 53-53ob (shipyard worker Serdiuk versus naval agent Aliakrinskii, April 13, 1937).

²⁷ RGAE, 8183/1/146: 39 (Blagoveshchenskii, April 13, 1937).

hay tomorrow, and belts the day after?”²⁸ “If the [naval agency] is staffed with weak employees then they will set requirements wrongly. Often a ship isn’t handed over because there is more squabbling going on than work.”²⁹ In a development once predicted by the political scientist David Holloway (1982: 325n) they considered the agents to be useful only to exert pressure on their own subcontractors.³⁰ The agents themselves realized that Industry regarded them with contempt, as “blunderers who . . . give us nothing useful,” or “formalists who . . . shove spokes in our wheels” and so on.³¹

This hostility arose because the military officers acted as the Army’s loyal agents. The chief instrument at their disposal for enforcing quality, and perhaps the only one that was effective, was their right to refuse to accept goods that were not up to standard. By rejecting the goods that Industry offered they threatened the ability of Industry to show compliance with supply plans and contracts.

This was a powerful threat, but not as potent as might appear at first sight. In theory plan and contract violations could carry direct administrative and legal penalties. In practice, however, military agents rarely looked to higher authority to impose punishments for low quality, and when they did they were typically unsuccessful. In 1933, for example, a military agent tried to use the party committee of aircraft factory no. 24 to bring to account those responsible for “malicious toleration of defective parts,” but without success.³² We have found only one case that, of naval armament factory no. 347, where a military agent took the managers to court on criminal charges of supplying substandard goods; the court cast doubt on the accusations and the file was returned for further enquiries. A review by KPK, the ruling party’s “control” or audit commission described above in Chapter 3, found that the judicial route was inappropriate and substituted dismissal for the criminal charges.³³

Financial penalties mattered more. When plans failed workers, managers, and ministerial officials lost bonuses; contract failures deprived the enterprise and ministry of revenue. Although it did not have the same significance as in a market economy, money did matter. Just as important, plan and contract violation

²⁸ RGVA, 47/9/83: 23 (Bobrov, 1928).

²⁹ RGAE, 8183/1/146: 48 (Serdiuk, April 13, 1937).

³⁰ For example, defence industry minister Kaganovich wrote to chief of the Red Army artillery administration Kulik asking him to tighten up the work of military agents at engineering factories that were supplying defective shell casings to defence factory no. 12 (RGAE, 7515/1/404: 247, June 20, 1938).

³¹ RGAE, 8183/1/146: 80 and 39 (April 13, 1937: “Blunderers,” Kudak; “formalists,” Blagoveshchenskii).

³² Hoover/RGANI, 6/1/91: 10 (March 17, 1934).

³³ Hoover/RGANI, 6/6/1616: 128 (May 13, 1941).

attracted complaints and was a signal for investigation. For those to whom a quiet life mattered more than money, to underfulfil a plan or agreement usually led to unpleasantness and disruption. Other classic investigations confirm how important it was for Industry to avoid this by fulfilling the plan (Berliner 1957).

The frequency with which Industry failed to fulfil the Army's contracts is one measure of the military agents' activism. At armament factories nos 74 and 286 in 1946/47, for example, the share of output that the military agents rejected rose above 40 percent.³⁴ Military agents could reject the entire monthly output of a given factory, for example that of defense industry factory no. 205 for March 1938 "in view of the totally unsatisfactory installation of electric plugs in all articles supplied."³⁵

Enquiries into the failure of defense orders by KPK often laid the fault at the military agents' door. According to KPK records, in January and February 1934 the Tula gun factory produced 3,000 carbines and 106 ShKAS machine guns, but only 800 rifles were accepted for the defense ministry and no machine guns at all. The 3,000 carbines "were presented for acceptance 23,000 times, almost 8 times per carbine on average."³⁶ KPK auditors concluded that "discord between management and representatives of military acceptance on the score of product quality" lay behind persistent plan breakdowns.³⁷ In 1944 the KPK official for the Khabarovsk region reported that "vexatious litigation," with the managers on one side and the OTK and military agents on the other, had taken hold of aircraft factory no. 126 on the issue of parts and components that did not conform to the blueprints. "These disputes . . . sometimes drag on for weeks . . . while business stands still." In the first quarter of 1940 rejected goods amounted to 375,000 rubles.³⁸

The military agents' screening could outdo OTK control by an order of magnitude. Among the aircraft that the OTK of factory no. 126 passed in 1940, the military agent found up to 80 defects.³⁹ In the first nine months of 1940 of 6.6 million shell cases produced at munitions factory no. 184 the OTK scrapped 2.74 percent; after that, the military agent scrapped a further 10.5 percent.⁴⁰

³⁴ RGAE, 8157/1/4105: 213 (Mandich, October 21, 1947).

³⁵ RGAE, 7515/1/404: 158 (Savchenko to M. Kaganovich, 1938).

³⁶ Hoover/RGANI, 6/1/22: 34 (March 7, 1934); emphasis in the original omitted.

³⁷ Hoover/RGANI, 6/1/22: 36 (March 7, 1934).

³⁸ Hoover/RGANI, 6/2/27: 108-109 (July 29, 1940).

³⁹ Hoover/RGANI, 6/2/27: 108 (July 29, 1940).

⁴⁰ Hoover/RGANI, 6/2/34: 158-159 (December 27, 1940).

Not all military agents refused to compromise on quality issues or demanded unconditional adherence to agreed standards; in 1937, for example, naval officers warned against the common practice of accepting vessels without the necessary technical documentation.⁴¹ KPK factory audits of the period report other failures of a similar type. At a naval armament factory the military agent was reported to have accepted substandard mines.⁴² At aircraft factory no. 39 in 1939, it was said, “[the] senior military agent . . . and regional military engineer . . . have impermissibly weakened control over the quality of accepted goods, established the practice of accepting unfinished aircraft subject to written factory guarantees, and left aircraft armament unchecked.” Aircraft with unserviceable machine guns, and bombers with engines that suffered overcooling when cruising in level flight, were accepted and put into service. Iron replaced chrome-molybdenum for rivets with the silent consent of the military acceptance officers, and so forth. Significantly, chief of the air force purchasing administration Efimov was accused of colluding with these malpractices: “not only did [he] not take measures to restore order but [he] even suppressed criticism of the defects, describing the communists who raised the criticisms as “cry-babies” and threatening them with dismissal.”⁴³ Efimov was one of the top supply officials in the defense ministry; if this was his attitude, the case of factory no. 39 cannot have been unique.

In the years of rapid prewar expansion equipment supplied to military units often turned out to be unfit for service although the military agents had previously passed them as acceptable. In March 1938, for example, the air force complained to defense industry minister Mikhail Kaganovich about numerous defects in I-16 fighters and UTI-4 trainers, and requested that the factories themselves despatch special repair brigades to military units.⁴⁴

Military agents’ standards appear to have slipped markedly with the outbreak of war. The records of tank factory no. 183 show that in every year of the war more than half the tanks taken into military service were registered with one or more defects at the point of acceptance. The worst year was 1942 when only 7 percent were reported free of defects. The high rate of defects at this stage of the war was attributed to the fact that factory no. 183 was newly assembled out of plant evacuated from five locations in the war zones. The frequency of defects fell back in subsequent years, however, as wartime output expanded and experience accumulated.⁴⁵

⁴¹ RGAE, 8183/1/146: 38 (Blagoveshchenskii, April 11-13, 1937).

⁴² Hoover/RGANI, 6/6/1616: 127 (May 13, 1941).

⁴³ Hoover/RGANI, 6/2/17: 47 (KPK bureau decree, December 3, 1939).

⁴⁴ RGAE, 7515/1/404: 4-6 (March 29, 1938).

⁴⁵ RGAE, 8798/4/17: 231-232 (“History of Tank Factory no. 183,” manuscript).

The situation was no better elsewhere. For example of the T-34 tanks that factory no. 174 presented to the military agent in August 1943 only 4.5 percent were free of defects and more than half had three defects or more. From April to August 1943 roughly a tenth of vehicles were in such a bad state that they were returned to the factory for remedial work before re-testing.⁴⁶ The same happened to more than 20 percent of tanks supplied by the Kirov factory in Cheliabinsk.⁴⁷ Subject to repeated testing, however, military agents eventually accepted virtually all tanks produced; across the industry, in July 1943, tanks accepted ran at 99 percent of those supplied.⁴⁸

It seems that in wartime, at least, only totally unserviceable goods were rejected; most equipment was taken for the army following re-testing, defects and all. The result was a steady flow of complaints by military units. In April and May 1943 the Army made 77 complaints to Industry about cracks in tank bodies.⁴⁹ A recent study of the tank industry by the young Russian historian Arsenii Ermolov (2004) provides further detail. During the war 12 percent of all tank losses were ascribed to technical faults; this proportion was higher in 1942 and 1943. In the summer of 1942 the military agent at tank factory no. 183 found that every tenth new vehicle sent to the front was being reported as needing repair. In his view this understated the true position: only one quarter of actual defects was being reported; military units were either tolerating the remainder or fixing them at their own expense. A senior officer responsible for armored equipment recalled that “in one particular engagement on the Stalingrad front, when our tank numbers were evenly matched with the Germans, only one quarter of our tanks actually took part – say, 100 out of 400 tanks.”

The standards that military agents applied to armament were probably more stringent than those for personal kit and transport stores. While the gap is inherently difficult to measure, KPK documents give the impression that military agents allowed more defects in soldiers' clothing and footwear and that their superiors in the central supply staff of the defense ministry agreed with this. A KPK audit of 1937 found that “the army is supplied with footwear made out of leather of completely unsatisfactory quality.” “Neither the ministry for light industry and its plant managers, nor the Red Army administration for supply of troops is giving the necessary attention to the quality of military footwear.” “[Each] military agent in the localities has to service four to six or more production establishments and cannot systematically check up on the footwear plants.” At some factories up to half the footwear that the military agents had accepted was substandard. “The [supply administration] has systematically tolerated a lowering of requirements in the footwear supplied, with regard to both

⁴⁶ RGAE, 8752a/4/293: 180, 182 (August 11, 1943).

⁴⁷ RGAE, 8752a/4/293: 188 182 (August 11, 1943).

⁴⁸ RGAE, 8752/4/293: 66 (August 11, 1943).

⁴⁹ RGAE, 8752/4/293: 114 (August 11, 1943).

soles and materials.” In this case the mutual rights and responsibilities of buyer, seller, and military agents were undefined since the draft regulations had been under consideration by the ministry for light industry for two years.⁵⁰ The situation persisted for three *more* years: in 1940 a KPK report found that “defense ministry acceptance agents in factories and plants [of the light and textile industries] are tolerating substandard items on a massive scale.”⁵¹

Why did military agents not rigorously enforce defense ministry guidelines on substandard equipment? The main reason is that, out of loyalty to the Army, they could not reject everything that Industry offered them. One of the OTK chiefs at the armament ministry meeting held in October 1947 let the truth slip: “I don’t agree that we cannot come to terms with the military acceptance staff . . . They are state officials the same [as us] and *they are responsible for equipment orders* to the same extent [as us].”⁵² The same logic also led their chiefs on the supply staff to collude with them and not punish them for lowering standards.

If agents demanded inflexible adherence to standards, they laid themselves open to criticism for excessive zeal or caution. For example, a KPK factory report of 1940 condemned the OTK and military agent at aircraft factory no. 126 for “a tendency to over-insurance.”⁵³ Surveying the work of military agents in 1943 the KPK demanded that “the military agent should in most cases rule on the acceptability of one or another deviation [from standards] so as not to delay products for the front.”⁵⁴ Thus, while military agents may have tried not to accept goods that were clearly unserviceable, there was pressure on them to tolerate some level of defects.

It may be asked why, through repeated exchanges, Industry and the Army did not learn each others’ preferences and resources so as to converge on a mutually beneficial equilibrium in which the Army obtained goods of the quality it required and Industry was able to fulfil its plans without the need for costly rejections and plan failures. One reason may be that the annual process of plan and contract revision prevented the hold-up problem from being solved by long-term contracting. Instead, the planning process focused each side on extracting the maximum short-term advantage from the other, year after year. Another reason was that learning was inhibited by very rapid change in the product assortment: in the 1930s, for example, one year’s procurement of aircraft rarely replicated the purchases of the year before to any significant extent.

⁵⁰ Hoover/RGANI, 6/1/72: 77, 82-84 (June 10, 1937).

⁵¹ Hoover/RGANI, 6/2/250: 41-42 (May 14, 1940).

⁵² RGAE, 8157/1/4105: 136 (Dovichenko, October 21, 1947); emphasis added.

⁵³ Hoover/RGANI, 6/2/27: 109 (June 29, 1940).

⁵⁴ Hoover/RGANI, 6/2/49: 9 (July 7, 1943).

In this context the Army viewed the results of its procurement apparatus as thoroughly worthwhile. Even in wartime when the front line desperately needed career officers, the defense ministry refused to cut numbers of military agents by merging its specialized purchasing administrations into one.⁵⁵ There were at least three wartime proposals to do this, one in 1941 and two in 1943; the ministry rejected them all on the grounds that “Creating a unified apparatus for regulation and acceptance of military production, independent of the chief administrations, would lead to a loss of accountability in regulating the production of armament and munitions, and to a reduction in their quality.”⁵⁶

Bargaining For Quality

In setting out the hold-up problem in the market for weapons, we made two predictions. First we suggested that, when held up by Industry, the Army would find it more important to uphold quality than quantity. This was shown in Figure 6.3 where the Army’s valuation of quality, given Industry’s post-contract offer at point x , exceeded that of Industry. Second, we suggested that Industry and the Army would be jointly interested in collusion to conceal the resulting shortfall on quantity. Consistent with these expectations, we find that military agents typically took a harder line over quality than quantity. They were ready to offer some leeway to Industry over quantitative fulfilment as the price for maintaining quality. The outcome was a bargain which fell short of the initial contract but was more efficient than Industry’s initial post-contract offer. The Army was still held up, but less inefficiently than would appear at first sight, and in return allowed its agents to help conceal Industry’s otherwise verifiable shortcomings.

Procurement delays were often concealed. The KPK archive contains many cases of reports falsified by both civilian and defense enterprises. The usual form was to exaggerate output over the accounting period by including *pripiski*, goods that did not exist yet but would be produced in the next period. *Pripiski* allowed the enterprise to claim fulfilment of the plan and entitlement to a bonus by “borrowing” future output.

This practice involved criminal deception. A single enterprise could not undertake it successfully in isolation, therefore; ministerial superiors had to know about it and the customer had to go along with it in silence. The wider the circle involved, the greater were the risks of disclosure. Despite such risks, however, in the seller’s market for civilian goods the power of suppliers was often enough to win the cooperation of both superiors and purchasers (Berliner 1957).

Pripiski were widespread, also, in the Soviet defense industry. A KPK report of 1946 for example, claimed that a tank factory director “is systematically engaging in the *pripiska* of goods that have not finished production” and that his chief administration, although aware of this, “has not only not prevented but has

⁵⁵ Hoover/RGANI, 6/2/49: 8-10 (July 7, 1943).

⁵⁶ Hoover/RGANI, 6/2/49: 9 (July 7, 1943).

even rewarded it.”⁵⁷ Similarly, the KPK found that in 1944 the relevant administration of the armament ministry told a factory director “to report inflated information to the ministry.”⁵⁸ In September 1944 the KPK acknowledged that *pripiski* were widespread: in 1943 and 1944 an armament factory had “continually reported falsely inflated information about the fulfilment of the factory’s program, typically using from 5 to 20 days of the following month to complete production”; an aircraft factory had reported “incorrectly inflated information about plan fulfilment” in 1943 and for the months of January, February, and March 1944; the managers of a tank factory “have also been deceiving the government and ministries by reporting false information on the fulfilment of the production program.”⁵⁹ There were even *pripiski* in a vehicle repair factory of the defense ministry itself; the ministry’s vehicles administration, while “aware of all the factory’s shortfalls and lack of management, took no measures to overcome them.”⁶⁰

Widespread *pripiski* indicate a systematic tendency for Industry to ignore delivery deadlines: goods were regularly delivered to the Army a month or more late. The military agents could never have been unaware of this. In the western literature there have been divergent views on whether Soviet military agents would have colluded with *pripiski* for the sake of maintaining the producer’s goodwill. Arthur J. Alexander (1978: 59n) thought this likely, while the Soviet émigré Mikhail Agursky, writing with Hannes Adomeit (1978: 23), judged it improbable. In fact Alexander was right: military agents virtually never took action to enforce deadlines. Of all the cases of *pripiski* that the KPK uncovered, only two were reported by military agents. In September 1941 a military engineer reported an unacceptable delay in an order for gas protection equipment placed with the ministry of general engineering.⁶¹ Intervention by the KPK secured a new deadline for the order, but no penalty for the delay. In 1943 a military agent and his senior technician reported on “deception and irregularities” at an electrical factory; this led to a special audit commission which confirmed the various violations.⁶²

External KPK auditors themselves uncovered other *pripiski*. When they did so, they found that the military agents had colluded tacitly or openly in the deception. In 1944, for example, the military agent had joined the director of an armament factory in signing a cable reporting 101.5 percent fulfilment of the

⁵⁷ Hoover/RGANI, 6/2/98: 81, 85 (August 2, 1946).

⁵⁸ Hoover/RGANI, 6/2/67: 11 (1944).

⁵⁹ Hoover/RGANI, 6/6/1583: 10-13 (July 15, 1944).

⁶⁰ Hoover/RGANI, 6/6/1583: 31 (October 26, 1948).

⁶¹ Hoover/RGANI, 6/6/47: 18 (September 29, 1941).

⁶² Hoover/RGANI, 6/2/55: 1-2 (KPK bureau decree, October 28, 1943).

April program when both knew this to be false since it took part of the May program into account. Significantly, higher officials representing *both Industry and Army* had approved the *pripiska* by April 30.⁶³ They justified this on the basis of precedent; the defense official noted that he had approved similar arrangements in other cases “to avoid a breakdown of the plan and provision for the needs of the troops.”⁶⁴ It was the same in the tank factories. In 1942 the KPK officer for Sverdlovsk district found evidence of largescale *pripiski* for September, October, and November at the Uralmash factory not just “with the ministry’s knowledge” but “on the instruction” of the minister and deputy minister, most of which the military agent went along with.⁶⁵

In short, deadlines for the supply of armament seem to have caused little anxiety to military agents; and even their superiors were ready to approve a degree of delay. They did have to *look* as if they supported firm deadlines. This led them to collude with enterprise managers in falsifying reports of plan fulfilment. In return, they gained cooperation over quality.

Military market places display obvious inefficiencies under most institutional arrangements, but that of the Soviet Union was characterized by monopoly and exclusivity to an unusual degree. This presents a particular problem in the scope for one side to hold up the other. We have shown that in the Soviet defense market it was the seller, Industry, that was best placed to hold up the buyer, the Army. The form that the hold-up typically took was for Industry to default on quality.

This hold-up problem could not be resolved by the conventional means recommended by economic theory: vertical integration was not in Stalin’s political interest, and long-term contracting was ruled out by the discretionary logic of command planning under a dictator. Instead, the Army sought to solve the problem by deploying agents through industry to verify quality and reject substandard goods, threatening Industry with an easily verifiable shortfall on quantity. The Army was prepared to pay tens of thousands of agents and pay them well for their loyalty, even in the midst of a total war. These agents, however loyal, still had to reach a compromise with Industry. In the typical bargain the military agents agreed to overlook quantity violations in return for greater cooperation on issues of quality.

⁶³ Hoover/RGANI, 6/2/63: 159-160 (June 5, 1944).

⁶⁴ Hoover/RGANI, 6/2/63: 21 (July 8, 1944).

⁶⁵ RGAE, 8752/4/108: 151-151ob (December 7, 1942).

Figure 6.1. Before the Hold-Up: Contract

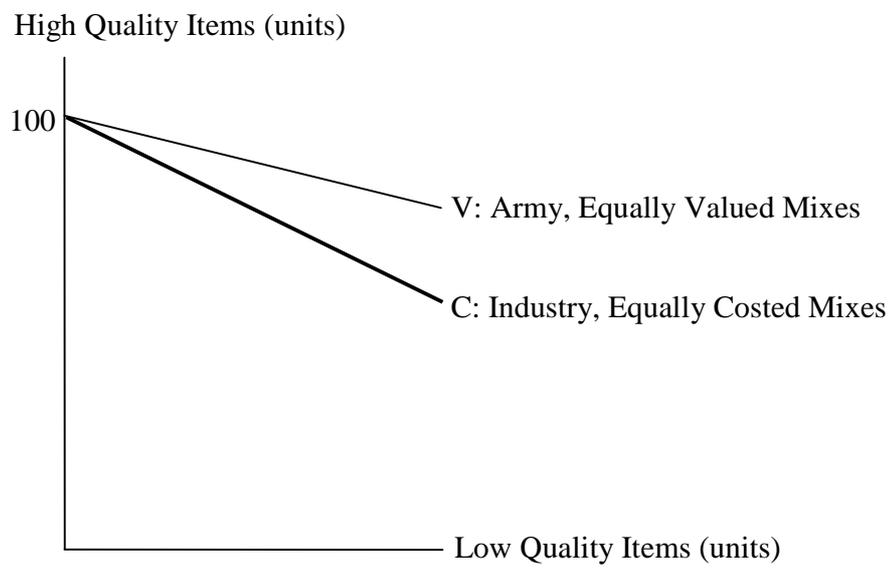
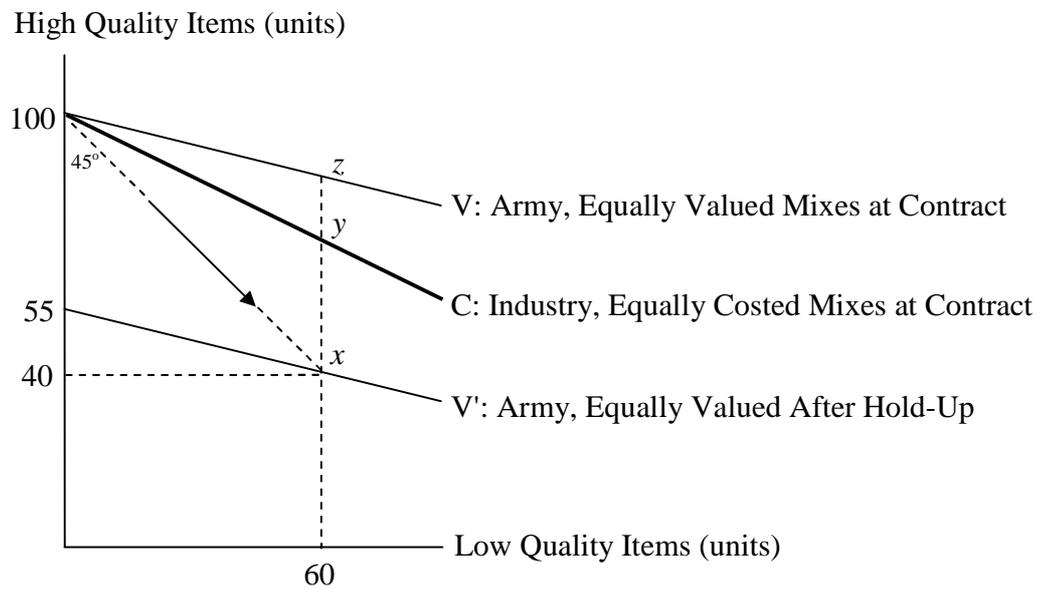


Figure 6.2. After the Contract: Hold-Up



Key: before readjustment,
 xy = Industry's gain from the hold-up;
 xz = the Army's loss.

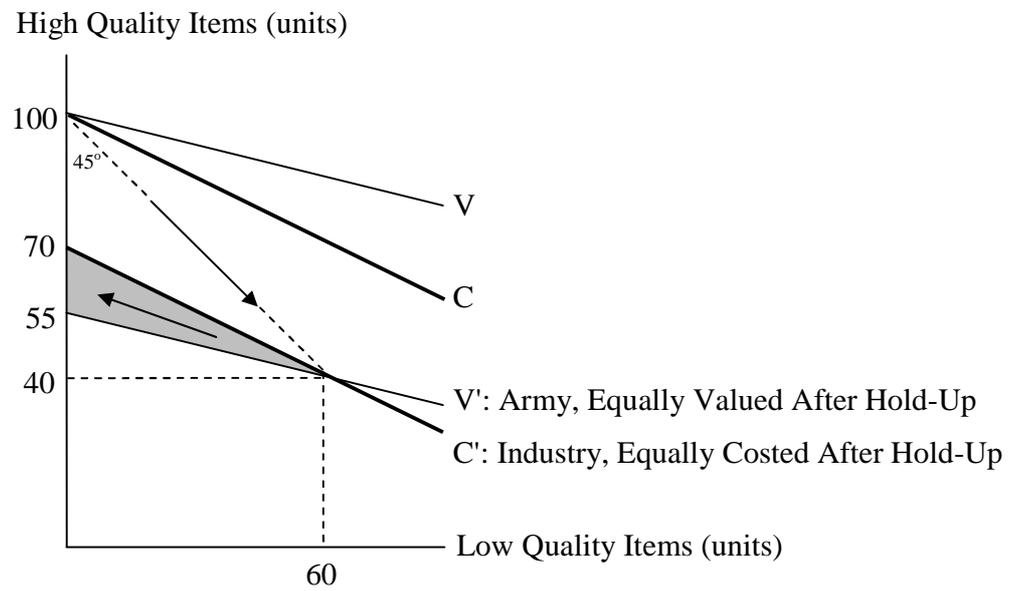
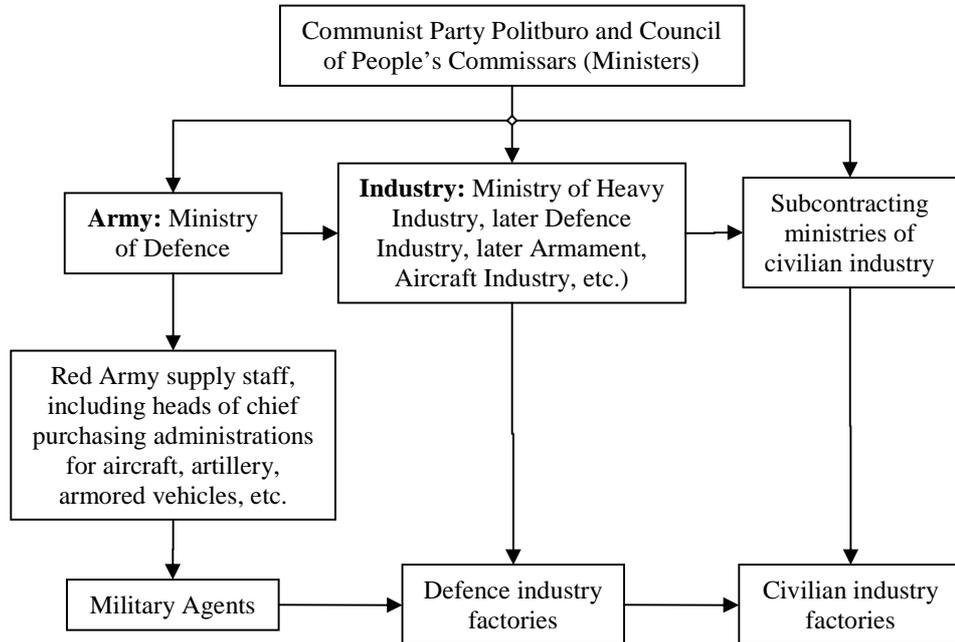
Figure 6.3. After The Hold-Up: Readjustment

Figure 6.4. Principals and Agents in the Military Market Place



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