

Voenpriemka: prices, costs, and quality assurance in defence industry*

Mark Harrison**
and
Nikolai Simonov

In this chapter we examine the Soviet system for *voenpriemka* -- the acceptance by the defence ministry of military equipment produced by industry for the armed forces. The institutions concerned were evolved in the 1930s in order to contain and manage fierce conflicts of interest between the army and industry, and their operation is therefore of interest from several points of view. The military strategist will seek illumination of the factors influencing the cost and quality of Soviet weapons. The economic historian will aim to discover the logic of the business strategies pursued by Soviet producers to defend their interests under pressure. The student of political economy will wish to probe more deeply into a significant fault line within the Soviet military-industrial complex.

The evolution of institutions in this period was shaped in part by trends in real variables. As far as the latter concern us, they may be stated briefly as follows on the basis of chapter 4 above. After World War I (1914-17) and the economically even more disastrous civil war (1918-21) Soviet defence spending fell to historically low levels. Budget defence outlays in 1928 were probably no more than 2.4 percent of GNP at prevailing prices. By 1940, their GNP share had risen to 13 percent, despite a significant relative cheapening of defence goods and services (table 4-12). In real terms (at constant factor costs of 1937) GNP in 1940 stood at twice the level of 1928, but the number of men and women in military uniform had risen seven-fold while the real volume of defence production had risen many more times than this (tables 4-2 and 4-3). Where in 1930 Soviet industry had supplied 10 500 rifles, 80 guns, 75 aircraft, and 14 tanks in each month, by 1940 the monthly rates had risen to 120 000 rifles, 1275 guns, 880 aircraft,

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** Mail: Department of Economics, University of Warwick, Coventry CV4 7AL, UK. Email: mark.harrison@warwick.ac.uk.

and 230 tanks.¹ Moreover each tank, aircraft, gun, and rifle of 1940 was far more complex and costly than in 1930.

Over the interwar period there was also sharp discontinuity in the evolution of the economywide allocation system. In the 1920s there was a mixed ownership system and a market economy within which the expanding public sector was increasingly driven by nonprice controls. At the end of the 1920s a violent process of confiscation and centralisation greatly expanded the role of the public sector and launched the economy onto a state-led quantitative expansion drive in which investment and defence benefitted from priority allocation. At first, financial discipline was temporarily lost altogether. By 1931, however, the drive for quantitative expansion at any price was being modified by the reintroduction of controls on costs and qualitative criteria under the general heading of *khozraschet* (roughly, 'business accounting'). Targets for physical output expansion remained more important than targets for cost reduction, but the latter could no longer be regarded as negligible by industrial leaders.²

The present chapter is based on documents found in central archives of the former Soviet Union. It represents a view from above, and relies disproportionately upon the attempts of the Soviet military to understand and control the behaviour of defence industry enterprise. Although the documentary material is largely new, the paper is written in the traditional Sovietological manner which seeks to infer underlying trends from the study of official measures and the official rationalisations offered for them. Its main emphasis is on the period between 1930 and 1940, but evidence from both earlier and later periods is introduced where available in order to provide further documentation of continuity and change in the army-industry relationship.

The defence producer and the state

Cost and quality in a shortage economy

The control of costs and quality in defence industry is not specifically a Soviet problem. At the root of the problem lies the fact that defence production cannot be left to the market. There is only one purchaser, the defence ministry. The defence ministry pursues goals of national security, by comparison with which the meeting of financial targets usually appears to be of secondary importance. To procure weapons, the defence ministry relies mainly -- though not exclusively -- on a relatively small 'charmed' circle of big industrial firms, the specialised defence contractors. Even in a market economy such firms usually exercise substantial price-making power arising from the concentrated, oligopolistic market structure, the common interest of firms and government in the maintenance of excess capacity which in turn forms

¹ See the appendix tables to Harrison and Davies (1997).

² See further Davies (1994), 1-23.

one of the most important barriers facing potential entrants, and the low risk that government will punish existing firms' inefficiency by forcing their exit. Together these factors work to soften the defence producers' budget constraint and encourage discretionary behaviour. As a result, the cost of defence goods is harder to control than the quantity produced.

Quality is also hard to control, and this too encourages defence producers' discretionary behaviour. The qualities of a weapon system are given *ex ante* by the specification issued by the defence ministry, which is known to everyone. In an *ex post* sense, however, quality is determined by two things. Does the design live up to its prior specification? Did the producers adhere strictly to the design? The knowledge relevant to answering these questions is held not by the defence ministry, but elsewhere. Only the frontline soldiers and airmen have first-hand knowledge of what the weapon is like to use (and in a peacetime context this knowledge is imperfect since combat conditions can be at best simulated through exercises). As for the technical conditions under which the weapon was made (which are among the most important determinants of quality), such knowledge is held at first hand by the production workers and managers; only they know whether the materials used were of the proper standard, whether the components were reliably tested, and whether the product was finished to the requisite degree of accuracy. The defence ministry can acquire this knowledge as information, but the transfer of information is again fraught with scope for discretionary behaviour. Information can be withheld, exaggerated, or distorted in transmission by those who supply it, as well as inflated or discounted by those who receive it. In the case of the producers, there is a clear incentive to conceal defects in the production process and product alike, especially since there is a good chance that the defects will either never come to light or be discounted as soldiers' grumbling.

A specific feature of the Soviet context was that *all* public-sector firms, accounting for the overwhelming bulk of industrial production, were in the position described above, regardless of the military or civilian profile of their products. They faced a single purchaser, the state, the primary objectives of which were expressed in real security and developmental targets rather than fiscal or monetary objectives; state officials were motivated primarily towards discretionary control over firms' physical resources. As the natural correlate of submission to this regime, Soviet firms' existence was guaranteed regardless of profit or loss by means of their uncontrolled access to the fiscal and monetary resources of the state -- the famous 'soft budget constraint'. As a result, firms found that they operated in a 'sellers' market', with broad scope for discretionary behaviour; so long as they barely fulfilled quotas for the quantity of output handed down from above, they could in practice allocate significant resources towards internal goals such as the maintenance of a labour reserve and other excess capacities which reduced the burden of productive tasks upon both workforce and management.

Thus it was easier for the central authorities to control quantities produced than costs. Control over quality was also a perennial issue. The Soviet state's officials, although motivated towards discretionary control over firms' physical resources, were separated by a vertical hierarchical distance

from the processes of production and use of firms' products. Knowledge of product and process qualities was held at lower levels by producers and users -- firms, households, and service organisations (including the military). Officials were not themselves users of the great bulk of goods and services which firms produced, which weakened their direct knowledge of and interest in quality. Their knowledge of quality was filtered and aggregated through many levels of administration. Since quantities were controlled strictly, and quantitative measures were relatively unambiguous and unavoidable, firms sought to expand their scope for discretion by manipulating quality to the detriment of the user. Every factory was subject to its 'department of technical control' (*OTK*, short for *otdel tekhnicheskogo kontrol'ia*), responsible for accepting or rejecting products and reporting violations to higher ministerial authority. But officials could be found at every level to collude in firms' transgressions for the sake of fulfilment of the ministerial plan for the physical quantity of output. Defects could be concealed at each vertical stage, and users' complaints discounted as occupational grumbling.³

If the Soviet defence producer was in a special position, it was not because of the absence of a well-functioning market, which by the twentieth century did not exist for defence goods in western industrial market economies or anywhere else in the world. The unusual feature of the Soviet defence producer's environment was the sustained effort made by Soviet officials to set up non-market constraints on the behaviour of defence producers and limit their discretion over weapon costs and qualities to a far greater extent than in the case of civilian products. That this was so testifies in turn to the special position of the defence commissariat (the NKVM until 1934, then the NKO) within government. This special position was constituted by its institutional power and its objectives.

The objective of the defence ministry was to maximise national security on the basis of the resources available. Other ministries' goals were translated into simple numerical quantities, even in the services sector -- tons of steel, metres of cloth, ton-kilometres of freight, numbers of publications, arrest quotas, surgical operations carried out, films released, children taught through the pedagogical year, and so on. National security was not measured in this way, and continued to be evaluated on the basis of analytical, synthetic measures. In the event of a national security failure, it was the armed forces who would bear the first and heaviest costs. The defence ministry had a vital interest in quantity, and especially in maximising the quantity of weapons which could be purchased out of a cash-limited budget, but not in substituting quantity for quality, not in quantity at any price; only in quantities of those

³ From 1936 onwards most Soviet industrial construction was carried out by specialised construction agencies, and a similar set of institutions was established in to monitor their costs and results (for description see Davies (1958), 258-61). The progress of fulfilment of construction contracts and authorisation of payment for work done was governed in principle by a series of 'deeds of acquisition' (*akty priemki*) issued by the purchasing organisation or investor, and validated by the bank officials responsible for construction finance. In practice the investor and contractor tended to collude in the concealment of contract violations, inflation of costs, and bidding for additional resources. The bank officials were helpless because their resources permitted them only to audit the paperwork, not to carry out on-site inspections.

weapons and equipment items which really would meet the perceived needs of national security. The defence ministry had little or no interest in accepting substandard equipment, or in acquiring excessively costly equipment when cheaper alternatives were potentially available. Thus defence objectives gave special weight to the control of defence production costs and quality. The power of the defence ministry, in turn, gave it institutional means to enforce these controls.

Voenpriemka, voenpred

Not much is known in the west about the operation of the system of *voenpriemka* (*voen-* stands for *voennaia* or 'military', *priemka* for the system, apparatus, and process of 'acceptance' of industrial products by the military). Most of our prior knowledge concerns the defence ministry's 'military representatives' (*voenpredy*, short for *voennye predstaviteli*) in industry. But even on this subject little was published in the Soviet Union where, 'as is so often the case ..., the importance of the subject [was] inversely related to its frequency of mention in the press'.⁴ The limited information available in the west comes primarily from the personal accounts of emigrants and from emigrant interview data.⁵

The military representative was the key figure in the system of *voenpriemka*. According to a rare official account, the military representative was:

an officer or employee of the armed forces, permanently engaged in industrial plant fulfilling military orders, and endowed with the right to check the quality of the output produced. The military representative of the USSR Ministry of Defence checks the observance of the technological process of manufacture of weapons and military equipment and other military products, and the calculation of their production costs; carries out the acceptance of finished products after carrying out the corresponding trials and verifications of their quality and reliability; ... and verifies the elimination of defects revealed in the process of acceptance and utilisation ...

In the USSR checking the fulfilment of military orders is implemented according to types of weapon and military equipment. It demands high technical and specialist training of military representatives, the majority of whom are engineers ...⁶

Thus the military representatives' place of work was in defence industry, but they answered solely to the ministry of defence. Their roles and responsibilities were defined and redefined on several

⁴ Almquist (1990), 57.

⁵ See for examples Agursky (1976), Agursky and Adomeit (1978), Alexander (1978), and Almquist (1990), 57-8.

⁶ 'Voennyi predstavitel' (1976), 271-2.

occasions in the 1930s, but there was always a common core.⁷ The initial specification of products and technological processes was jointly agreed between the industrial ministry and the defence ministry, and could not be altered without the consent of both. The factory management officials bore direct personal responsibility for the quality of output; the job of the military representative was therefore to verify fulfilment of defence orders in both quantity and quality, and to report on failures to the defence ministry. The military representative operated in parallel with the defence industry's own system of quality assurance, the OTK. The quality of products and processes was to be verified by means of personal observation of technological processes, access to factory records, carrying out trials of finished output, and accepting or rejecting deliveries on behalf of the defence ministry. (On the shoulders of the military representative was also laid responsibility for oversight of mobilisation planning and preparedness, a subject which does not so much concern us here.)

Prerevolutionary origins have been claimed for this system; a system called *voennaia priemka* was first established by the Imperial artillery service in 1862, and Peter the Great is credited with imposing 'military representatives' on Russian arsenals and shipyards at the beginning of the eighteenth century. The first measures of the Soviet regime to strengthen the system it had inherited were undertaken in 1920, as the civil war drew to a close.⁸ However, to draw an inference of general historical continuity from the Tsarist regime through

⁷ Among the significant statutes and decrees were the following 'Statute on military representatives in factories of military and civilian industry' (Order of Revvoensovet, 11 February 1930); 'Statute on the obligations of enterprise directorates concerning the quality of delivered products and concerning the control and acceptance apparatus of the people's commissariat of heavy industry and the people's commissariat of defence in factories of industry fulfilling defence orders' (Order of NKO and the people's commissariat of heavy industry no. 035/143 of 1 September 1934); 'Statute on the obligations of directors and the acceptance and defects apparatus (*priemno-brakovochnyi apparat*) of enterprises of the system of light industry and military representatives of the USSR people's commissariat of defence concerning fulfilment of orders for objects of transport and kit supply of the Red Army' (Order of NKO and the people's commissariat of light industry no. 105/6 of 1937); 'Statute concerning military representatives of the people's commissariat of defence in industry' (Decree No. 204 of the Defence Committee of Sovnarkom, 15 July 1939).

⁸ 'Voennyi predstavitel' (1976), 271-2, where reference is made to a 'Statute on the technical acceptance of objects of military and naval supply and on the rights of the chief purchasing administrations (*glavnykh dovol'stvuyushchikh upravlenii*) concerning control over the output of military products' (decree of the Revolutionary Military Council of the Republic, October 1920).

revolution, civil war, and the New Economic Policy, to the Stalinist five-year plans would seem misleading. It seems unlikely that anything more complex than a conventional system of checks on product quality at the point of acquisition together with periodic on-site factory inspections and trouble-shooting commissions was in operation during the 1920s. Before 1930 the official documents available to us make no mention of the later 'military representative'; on the contrary, the discussions and decisions imply the absence, as yet, of this institution.

For example, in February 1926, a decree of Revvoensovet (the Revolutionary Military Council) introduced the new post of 'military assistant' (*voennyi pomoshchnik*) to factory managers in defence industry. The army proposed to detach no more than 16-18 officers for these new posts in 1926 and 1927. The duties of the military assistant in the factory were to oversee the fulfilment of current defence orders, the execution of mobilisation tasks, and the workplace security regime.⁹ (If the *voenpred* had already existed, these roles would have been entirely redundant.) Among the reasons for the innovation of 1926 was offered the following:

The higher command staff of the RKKA [Red Army] until the present time has not had sufficient information concerning the production possibilities of our industry, and, in particular, of specialised defence industry (*kadrovaia voennaia promyshlennost*).¹⁰

However, the 'military assistant' was conceived only as a conduit for information and advice; he had no powers of veto or consent over the delivery of finished products, as did the *voenpred* of later years, and was not considered important enough for mention in subsequent accounts and definitions of the procurement process.¹¹

That the 1926 statute did not yet inaugurate the *voenpred* system of modern times is, in our view, further confirmed in a statement by Red Army chief of armament I.P. Uborevich of 17 January 1930 to the effect that:

⁹ RGVA, 7/11/181, 237-9 ('Concerning introduction of the position of military assistants of factory managers in factories of the defence industry administration of VSNKh').

¹⁰ RGVA, 7/11/181, 236. On the meaning of 'cadre' defence industry see chapter 1.

¹¹ E.g. RGVA, 33776/1/309, 65-70 ('Basic statutes on mutual relations between the organs of VSNKh and organs of the people's commissariat of military and naval affairs concerning fulfilment of military orders for the Red Army, Navy, OGPU forces, and Escort Protection', 21 February 1927; clauses 20 and 21 dealt with the special role of product acceptance workers (*priemshchiki*) of NKVM purchasing agencies).

Until now *NKVM has not had a special apparatus for observation and control of the work of industry* with regard to fulfilment, on the stipulated dates, of annual planned orders, to organisation of initiation of production [*postanovki proizvodstv*] of new models of armament and their manufacture by the required dates; with regard to organisation and initiation of construction works and in relation to preparations for fulfilment of tasks designated for wartime ...¹²

The institution of the *voenpred* in the modern sense was approved by deputy defence commissar and Revvoensovet chairman I.S. Unshlikht on 11 February 1930 -- a few days after Uborevich's report. The 1930 statute dealt comprehensively with rights and responsibilities -- the responsibilities of industry, and the rights of the military.¹³ Industry was to be held responsible for the quality and serviceability of defence products supplied, this responsibility being exercised by special ministerial executives for defence orders (*upolnomochennye po voennym zakazam*) in civilian industry, and in defence industry by the factory directors themselves. At the same time the military representative was accorded sweeping rights of on-site regulation and control over production processes, product characteristics, and mobilisation readiness of factories engaged in defence-related work.

The statute also defined an elaborate apparatus and system of ranks among which the functions of the military representative were to be divided. At the apex of the system were the production-technical departments (*PTO*, short for *proizvodstvenno-tekhnicheskie otdely*) of the Red Army chief of armament's administrations for artillery, the air force, the armoured forces and so on. Below the PTO stood, in order, the senior *voenpred* (responsible perhaps for a single large factory or group of factories), the *voenpred* (responsible for a single factory or workshop), the assistant *voenpred*, and on the lower rungs the auxiliary craftsmen, technicians, testers (*brakovshchiki*), and so on.

The number of military representatives in industry in the early years is not known, but by 1940 there were more than 20 000 of them, the largest group (about two thirds) looking after production for the ground forces. The exact numbers for 1940, together with the distribution of the remainder, were as follows:¹⁴

Ground forces	13 791
Navy	3 004
Rear services	990
Air defence forces	34
Total	20 281

For comparison, in 1939 there were 218 specialised defence factories among the four defence industry commissariats (for the aircraft

¹² RGVA, 7/10/1434, 63 (emphasis added).

¹³ RGVA, 33776/1/339, 54-9.

¹⁴ RGAE, 7/1/384, 146.

industry, shipbuilding, armament, and ammunition).¹⁵ However, this figure does not include the large number of nominally civilian establishments engaged in defence-related work. If some allowance is made for the latter, one might guess that the number of military representatives of all grades in a typical workplace team was somewhere in the region of 30-50.

It took time for the institutional underpinnings of the system of price and quality controls over defence industry to be worked out. There was an unending evolution of rights and obligations on each side. The driving force behind this process was the striving of industry to preserve its scope for discretionary behaviour against the external constraints imposed by the defence ministry, combined with the countermoves of the latter.

The fact that *voenpriemka* involved a conflict of interest between industry and the military has certainly been acknowledged.¹⁶ However, the story so far has been told exclusively from the standpoint of the activity of the military representative who did his job, whether well or occasionally badly, and, if he (or she, but surely these were always men) interfered in or colluded with management, did so in the main harmlessly, acting in the interests of continuity of production and safeguarding the defence ministry's investment in the producer's goodwill.¹⁷ Thus, in the absence of evidence to the contrary we might suppose that industry was largely passive in this fraught relationship. The present paper shows that, in reality, industrial managers also pursued a variety of strategies designed to counteract (counter-act: neutralise or hinder by *contrary action*) such attempts to constrain their scope for discretionary behaviour.

Bargaining with the military: first moves

The powers of the Soviet defence ministry over industry were always limited, whether as customer or as regulator. Soldiers were outsiders, and never wore a management cap. In June 1927 NKVM submitted a

¹⁵ Simonov (1996), 108.

¹⁶ Almquist (1990), 126-31.

¹⁷ For examples, see Holloway (1982), 325n: 'given what we know of Soviet behaviour in organisations, it is not impossible that the enterprise director and the military representative will form a 'family group' in which the military man will use whatever influence he has to ease supply shortages, etc. so that production proceeds according to plan'; Alexander (1978), 59n: 'a decline in military production below planned output goals, followed by a surge the following month, may be juggled in the account books by the military representative to show that the plan was met in both months. In this way, the plant retains its bonuses for achieving the plan in both months, and the customer gets its output while maintaining good relations with local management'. The possibility of such collusion is rejected, however, by Agursky and Adomeit (1978), 23.

proposal to STO (the Council for Labour and Defence) with regard to new charters for defence industry firms. The proposal envisaged that NKVM would be given a direct voice (jointly with VSNKh, the ministry for state industry) in the appointment of defence enterprise management and chief accountants, in the approval of defence enterprise plans, reports, and accounts, and in the confirmation of proposals for investment, innovation, and other decisions affecting defence firms' capacity. This bid was wisely rejected. Apart from the incapacity of the defence ministry to manage industry, one may suppose that it would have been greatly to the detriment of the substantial civilian production carried on in defence plants. Instead, VSNKh was reminded of its obligation to 'involve NKVM representatives in *the part of work* of trusts concerning fulfilment of military orders'.¹⁸

This was as far from our modern image of a 'command economy' as it was from the military concept of command and obedience. The soldiers came to industry neither as superiors to subordinates in a hierarchy, nor as adversaries seeking outright victory over the enemy on the battlefield, but as negotiators, forced to bargain with self-interested counterparts who were not always willing to cut a deal. We are accustomed to thinking of the defence producer as privileged in terms of pay, material supplies, and honorific status within the Soviet hierarchy. But there was a price to be paid for privilege, measured in terms of freedom lost to closer supervision by external agencies, which could make the value of engaging in defence production doubtful to the producer. Consequently, even the making of agreements to engage in production for the military was itself a stony path strewn with obstacles.

¹⁸ GARF, 8418/1/75, 10 (emphasis added). The ministerial subordination of defence industry changed several times during the period which concerns us. The underlying process was one of progressive ministerial fragmentation which affected all production branches, not only the defence industry. At first defence industry fell under the defence-industry administration of VSNKh (the supreme council of the national economy, created on 2 December 1917), which administered all public-sector industry. VSNKh was broken up on 5 January 1932 into three people's commissariats for heavy industry (*Narkomtiazhprom* -- including the defence industry), light industry, and the timber industry respectively. On 00 December 1936 the heavy industry commissariat was itself subdivided, and an independent people's commissariat of the defence industry (*Narkomoboronprom*) was created, but three years later, on 11 January 1939, it was the turn of Narkomoboronprom to be broken up into four distinct commissariats (for the aircraft industry, armament, ammunition, and shipbuilding). The wartime and postwar years saw further subdivisions and reorganisations and the creation of several entirely new production branch ministries responsible for new military industries such as atomic weaponry, rocketry, and radioelectronics, but these involve a degree of complexity and detail beyond our present needs..

The producer's first gambit was to refuse defence orders. No doubt this was often just an opening move designed to reinforce industry's negotiating position when it became necessary to come to terms, but sometimes the result was that orders remained unplaced. According to administrative statute the distribution of military orders to industry was simply a matter for joint agreement of VSNKh (later, the various industrial ministries which succeeded it) with the central agencies of the Red Army chief of armament (for the artillery, armoured forces, air force, and so on).¹⁹ In the 1930s, however, the annual process of coming to terms was so difficult that it acquired a militarised jargon of its own, becoming known within the defence commissariat as the 'contracts campaign' (*dogovornaia kampaniia*). Every year this campaign dragged on through January and February, with perennial delays ascribed to disputes over prices, 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.

That the outcome could be a refusal of industry to tender for supply of military products desired by the defence commissariat is also attested.²⁰ The inducements required and offered to bring industrial agencies to the point of signing an agreement were not always lawful; a report on the slow progress of the 'contracts campaign' for 1933 lists both unauthorised price increases and illicit advance payments among the means employed by defence commissariat representatives to secure deals.²¹

Once defence orders were placed, and defence producers firmly identified, it is important to understand that the control of costs and quality presented industry with different issues. The defence ministry could be excluded by industry from regulation of costs and prices through *the delay and denial of information*. However, the frustration of defence ministry controls on quality was a different matter, which required an alternative course of action, a strategy of *regulatory capture*.

¹⁹ RGVA, 7/10/1434, 20 ('Statute on the participation of the organs of the people's commissariat for military and naval affairs in the work of industry on compilation of the mobilisation plan of industry, on defence construction in industry, and in work on the fulfilment of peacetime orders of the people's commissariat for military and naval affairs', 1 February 1930).

²⁰ For items omitted from the naval procurement plan for 1935, 'on one side in view of the shortage of means, on the other side *because of the refusal of industry*', see RGVA, 4/14/1315, 139 (emphasis added).

²¹ RGVA, 4/14/880, 5, 13.

The control of costs: delay and denial

Cost-plus pricing

According to János Kornai, the official system of producer price determination under state socialism was only 'pseudo-administrative'. In theory the supraministerial committee for prices fixed every single price, but in practice it can only do so by relying on the information supplied by ministries and enterprises. Instead of the horizontal bargaining which characterises the market, there is vertical bargaining within the bureaucratic system. In reality, the prices fixed from above 'merely endorse the prices set by the producer'.²²

Another feature of the shortage economy seems to be that firms' interest in the prices of inputs and products was not symmetrical. On the whole, firms were only weakly interested in the price of inputs; it was important to satisfy the imposed quota for output at all costs -- certainly, much more important than to satisfy any auxiliary financial profit-and-loss targets -- so a change in the relative price of inputs or an increase in marginal costs would have little effect on the firm's allocation decisions.²³ As for product prices, the prevalence of the soft budget constraint meant, of course, that firms had little or nothing to fear from a revenue shortfall in terms of financial viability, or to gain from a surplus, since profits were not retained and losses were made up from the state budget. To that extent it might appear that firms would also be indifferent to own-product prices. But this misconstrues the nature of the soft budget constraint. The budget constraint was *soft*, not *nonexistent*, and it was not soft *ex ante*, only *ex post*. There was a *softening process* perennially at work, in which firms were active participants, described by Kornai in the following terms:

There is advance bargaining: the goal of the firm, branch, directorate, or ministry is to make the pricing authority 'acknowledge' the costs in the price, however low the efficiency of production. There is subsequent bargaining also. A price rise is sought if extra costs have been incurred. In some other cases a disguised price rise is made. The quality assumed when the price was set is lowered, or a good material is substituted by an inferior material, or certain finishing processes are omitted.²⁴

Of course the strategy of bargaining for higher prices was only one possibility for the firm faced with an *ex ante* financial loss. The others involved bargaining for subsidies, tax breaks, soft bank loans, and so on. However, one might predict that the strategy of seeking a higher price was always preferable in the sense that it attracted less attention *ex post* from outside trouble-shooters and whistle-blowers. Certainly,

²² Kornai (1992), 149-50.

²³ Kornai (1992), 146.

²⁴ Kornai (1992), 142.

firms were always motivated to prefer more gross revenue to less, especially when physical output was highly heterogeneous and the output quota was specified partly or wholly in rubles, as was especially likely to be the case in the manufacture of defence products.

The interwar documentation of the relationship between the Soviet defence ministry and the defence producers is pervaded by industry's 'drive towards the raising of prices even for established lines of output' and the military's cash-limited struggle to contain them.²⁵ An essential weapon in industry's drive for higher prices was the denial of early information about costs to defence agencies, sometimes on the basis that it was too early to tell or that insufficient time was available to provide the necessary information, sometimes (as will be shown) on the basis that it was too secret to reveal. In this context the authorities were sometimes forced to set prices provisionally; these prices were therefore not fixed, even *ex ante*, but flexible in the light of results. The result was in essence a cost-plus system in the sense that whatever costs were incurred were covered *ex post* by fixing prices correspondingly. The authorities fought against this practice, but were unable to eliminate it.

Where's the ballpark?

What the authorities clearly sought was a mechanism for fixing defence product prices *ex ante* in relation to planned costs, so as to create a financial incentive for firms to achieve and, if possible, exceed *planned cost reductions*. Firms frustrated this intention by failing to provide the information necessary to plan costs in advance. They were assisted in this by the exceptional complexity and heterogeneity of defence equipment and rapid change in its specification and assortment.

According to a memorandum of A.I. Rykov, writing as chief of the VSNKh committee for military orders in July 1925, temporary rules for fixing weapon prices were first established by STO in November 1923.²⁶ Prices for military equipment were to be determined '*orientirovochno*' (provisionally), on the basis of unit costs. *Orientirovochno* conveyed the sense of figures which need initially be no more accurate than being got into the right ballpark. More accurate 'firm' prices would be fixed subsequently so as to guarantee industry against losses on defence production. In the meantime the provisional prices ('1.2-2.3 times the prewar level') established on this basis were then used at the end of 1923 for Narkomfin's calculation of the 1923/24 budget.

At the end of 1924 STO ordered a transition from provisional prices to 'firm' prices of defence products fixed in the usual way, i.e. including taxes, levies, and a 3 percent profit markup on planned costs. However, despite the intention that the regime of provisional prices should be temporary, in practice they persisted -- not just through 1924/25, as

²⁵ The quotation is from GARF, 8418/6/3, 2-3 (M.N. Tukhachevskii to V.M. Molotov, December 1931; this passage is cited more fully below).

²⁶ GARF, 8418/16/1, 283-95.

Rykov noted, but for decades. The reason given at the time was that industry dragged its heels in providing the necessary cost information to the extent that 'firm' prices could not be fixed for the 1924/25 budget year. However, for the following year the VSNKh prices committee succeeded in fixing prices for a significant range of items (personal kit, small arms and ammunition, artillery systems, aircraft and aeroengines, optical instruments, fuels, and repairs), 314 in number. These 1925/26 budget prices were substantially lower than the 1923/24 provisional prices, the reductions being forced through in the teeth of industry opposition and complaints about loss making. Rykov asked in conclusion whether in principle weapon prices should be determined in the usual way or by some special procedure, and noted that this question was not yet resolved.

The principle was decided by a decree of STO dated January 1926. 'Firm' weapon prices were to be based on planned costs plus a 3 percent markup for overheads. In practice, however, the defence producers continued to supply the necessary information late, so that prices simply validated *ex post* costs, and indeed included (in the view of the defence ministry) wildly excessive markups, to such an extent that in January 1930 the exasperated minister, Marshal K.E. Voroshilov, asked unsuccessfully for defence industry pricing to be referred to Rabkrin, the Workers' and Peasants' Inspectorate.²⁷

In these clashes can be seen the main lines of future conflict. The military procurement authorities were keenly interested in low, fixed prices for defence products. But the administrative burden of determining fixed prices for defence products was multiplied by the growing complexity and heterogeneity of defence products, and the rapidity of military-technical innovation which meant that the profile of defence products was constantly changing. Despite being insured against lossmaking, defence producers were reluctant to supply information necessary for the planning of costs to the authorities at the time when contracts were made for the supply of products; delaying the moment for fixing 'firm' prices until after contracts had already been agreed, and products were being delivered, gave them the upper hand, since their actual costs had now to be covered.²⁸

In a speech of June 1931, amidst the chaotic mobilisation of resources for the first five-year plan, faced with rising costs and pricing and growing shortages, Stalin condemned the collapse of Soviet

²⁷ GARF, 8418/4/17, 1, 6-10. The costs-plus-3-percent regime, further sanctified in 1931, was maintained well into the postwar period (e.g. RGAE, 7/1/384, 139).

²⁸ The use of provisional, not 'firm' prices was another objectionable feature of the agreements with industry signed by NKVM negotiators in the 'contracts campaign' of the winter of 1932-3, forced upon them by industry's strategy of delay in providing information and coming to terms (RGVA, 4/14/880, 5, 13).

'business accounting' (*khozraschet*).²⁹ Among the many consequences of this speech, rendered urgent by its context, was renewed attention to costs and price formation in defence industry. 'The greatest difficulty over prices', the Red Army's chief of armament M.N. Tukhachevskii wrote to V.M. Molotov in December 1931, 'is the withholding by industry of substantiated calculations and a drive towards the raising of prices even for established lines of output, in order to charge all defective work and production difficulties to the account of NKVM'.³⁰

As has been seen, the monitoring of costs was a prime function of the military representatives in industry. How hard defence producers struggled to retain their autonomy in the face of scrutiny from within by their powerful customer is suggested by a report (dated September 1935) from the chief of the military and naval group of the Party Control Commission to the NKVD chief N.I. Ezhov: grounds of official secrecy are being used to exclude *voenpredy* from the process of price determination, which allows many enterprises to behave 'extremely irresponsibly, self-interestedly, against the state (*kraine bezotvetsvenno, rvacheski, antigosudarstvenno*)' and engage in 'deception of the state' to exaggerate their unit costs. The report gives a single example, the 'substance' (i.e. an explosive or chemical agent) V-10, which cost not more than 70 000 rubles a ton, but sold to the defence ministry in 1935 at 123 900 rubles; but we are told that this reflected 'a widespread phenomenon'.³¹

That such practices was indeed widespread was confirmed by the finance minister G.F. Grin'ko in a memorandum to Sovnarkom on wholesale prices for defence products dated June 1937.³² Grin'ko also pointed to the prevalence within the people's commissariat for defence industry of exclusion of defence commissariat representatives from basic information about unit costs on grounds of secrecy; he demanded the rights of access to and verification of cost data for military representatives.³³

This report incidentally confirms the asymmetry of defence producers' responsiveness to prices of inputs and products, for among the chief determinants of prime contractors' costs were the prices of intermediate products. Grin'ko remarked that, given the high degree of subcontracting of defence orders, securing military representatives'

²⁹ Stalin (1940), 384 ('New conditions -- new tasks', 23 June 1931).

³⁰ GARF, 8418/6/3, 2-3.

³¹ RGAE, 7733/36/12, 137.

³² RGAE, 7733/36/40, 84-6.

³³ As a result the mistaken idea was fostered that military representatives bore responsibility only for quality, not for cost. Thus Mikhail Agursky had the impression that the job of the *voenpred* was 'to check only the quality of the output, not the cost and efficiency with which this output is produced' (Agursky and Adomeit (1978), 73).

access to cost records of defence industry prime contractors was not enough. There was also a lack of cost-accounting between prime contractors and subcontractors when prices of intermediate products were agreed; it was not normal either for subcontractors (who wished to secure higher intermediate product prices) to offer evidence of their own costs, or for prime contractors (who were indifferent to their own costs) to request it.

Who pays for brak?

Grin'ko's report defined an interactive relationship between the share of defective output (*brak*) and the formation of defence product prices. The report notes first that contracts to supply the defence ministry were still frequently agreed on the basis of provisional prices, even for items already in serial production. The 'firm' prices finally paid were determined on the basis of actually incurred costs, and so bore little or no relation to the provisional prices adopted initially. Therefore the defence producer had no incentive to minimise *brak* and other losses; any costs not anticipated when provisional prices were proposed would be automatically compensated by an increase in the 'firm' price. As a result, Grin'ko argued, the defence budget bore costs which were strictly the responsibility of industry.³⁴

Second, Grin'ko drew attention to the practice of enterprises' marketing of *brak* to sideline purchasers, sometimes to the military itself (e.g. for training purposes). Given shortage conditions, the equilibrium price of defective products could easily be higher than the 'firm' price for products in good condition. As long as any costs involved in producing defective products were automatically covered out of the defence budget, while revenues obtained from sideline marketing of *brak* also contributed to firms' objectives, a clear incentive was established for defence producers to produce *brak*.

In short, a higher proportion of *brak* tended to result in inflation of the 'firm' prices eventually agreed, and downward pressure on 'firm' prices tended to raise further the proportion of *brak* produced.

These considerations were reflected in twin resolutions of the Sovnarkom Defence Committee in September 1937 concerning the prices of aviation products and ground forces' equipment.³⁵ With regard to the former, the authorities sought to limit the application of provisional prices (based on planned unit costs) to orders for new products not included in the *preiskurant* (price-list), and even in such cases to require the establishment of a corrected price (based on records of unit costs supplied by industry, naturally), once half the order had been fulfilled, so that producers would have some regard for unplanned costs at least for the second half of the contract. In the case of products produced in 1936, according to this decree, prices for 1937 should be carried over from 1936 'without budget subsidy' (i.e. of unplanned costs). As far as ground forces' equipment are concerned,

³⁴ On 'who pays for *brak*', see also GARF, 8418/6/3, 2-3.

³⁵ RGVA, 51/2/441, 62-7.

the Defence Committee made similar provision to limit the application of provisional prices to new products; it also ordered the producers (the people's commissariats of defence industry and engineering) to supply cost information on request to NKO and its representatives, and allow military representatives to verify such data from primary documents. Other provisions required contracts for sideline sales of *brak* to specify prices below those prevailing for products in good condition, or, if to NKO for training purposes, at not more than 75 percent of the regular price.

More than 20 years later, a Gosplan review of aviation product prices for 1958 reveals great continuity with prewar patterns.³⁶ The report calls for an end to the 'current practice of supply of military products based on realised costs and provisional wholesale prices' -- the same practice which, as we saw above, the authorities first tried to abolish in 1925; it notes that cost-plus pricing in the aircraft industry was officially sanctioned during World War II, supposedly eliminated (again) in 1949, but was still much in evidence, associated with high rates of defective output and other losses. The report gives examples not just of cost-plus prices, but of many prices far in excess of unit costs revealed by investigation. The motivation associated with this behaviour by the author of the report was the drive to increase the enterprise's profit-related incentive fund (an additional factor supplementary to those considered above).

However, despite such revelations, excessive price-cost margins of '30-40 percent, in place of the prescribed 3 percent' in defence industry were still being remarked in August 1961 by A.F. Zasiad'ko on behalf of the Council of Ministers State Science-Economics Council; excessive prices were attributed to exaggerated cost forecasts which were never subsequently checked.³⁷

Resistance to new technology

Lastly, the military could try to influence industry by controlling its choice of technologies. During the 1930s, the defence ministry struggled to enforce on industrial suppliers higher standards of adherence to specifications, uniformity of measures and materials across the range of producers of identical or related products, and interchangeability of parts, especially with respect to artillery, small arms, ammunition, tank armament, and optical equipment. This approach became known as production according to "B" specifications' (*chertezhi lit. 'B'* -- a *chertezh* is a technical draught or drawing; a *litera* is a letter of the alphabet, and includes the sense of a printer's typeface or font). Here defence officials were largely at one with their ministerial counterparts in industry, while resistance took the form of foot-dragging and noncompliance in industry from below.

Two main benefits were expected to flow from widespread adoption of 'B' specifications. One was a great reduction in unit costs. The other

³⁶ RGAE, 4372/3/4, 136-40.

³⁷ RGAE, 7/1/384, 139.

was much easier enforcement of product quality standards. These were to be gained at the expense of a single enemy -- the 'backward, semi-artisanal method of work' in defence industry, rooted in the entrenched bargaining power and professional autonomy of the skilled, high-wage craftsman. In the official view, it was this system which gave rise to arbitrary variation in production technologies and product specifications; prevented realisation of the economies of scale and mass production; imposed great costs on the defence budget in higher prices, larger reserve stocks of incompatible spares, and repeated trials of products of unpredictable quality and reliability; fostered very high levels of rejected output (*brak*); and even (a sign of the times) 'created conditions in which sabotage by individuals and organisations could long pass unnoticed'.³⁸

Deskilling of labour, and the removal of craft workers' discretion over the production process, were therefore significant means by which such defects could be eliminated. The conversion process, begun in 1933, was to have been completed in 1935, but the process lagged continually behind the targets established by agreement between industry and the defence ministry.³⁹ Such delays aroused protests from the military side, while industrial officials made their excuses. 'The engineering and technical cadres in defence factories', wrote Pavlunovskii to Voroshilov in November 1935,

trained entirely in artisan methods of work, have for a long time not understood the necessity to work to a rigidly prescribed technology. A section of engineering and technical personnel, the craftsmen and skilled workers simply oppose the implementation of [this] conversion of production, and therefore it has been necessary to carry out the conversion of production in defence factories under great pressure.⁴⁰

The strategy of delay worked for a while, but was eventually broken. The forces of resistance on the shop floor had no allies in high places; the officials in their own ministry were against them. By 1945 three waves -- Stakhanovism, the great Ezhov purges, and World War II -- had washed the Russian prerevolutionary craft tradition up on the beach of history. Whether all the anticipated gains were realised is another story.⁴¹

³⁸ RGVA, 4/14/1315, 198-9 (memorandum of Pavlunovskii to Voroshilov, November 1935).

³⁹ RGVA, 4/14/1298, 140-52.

⁴⁰ RGVA, 4/14/1315, 199.

⁴¹ According to Agursky and Adomeit (1978), 23, in the postwar period the standardisation of parts in defence production led sometimes to loss of interchangeability with civilian products. Thus, 'the chief designers of military design bureaux often do not adhere to 'state standards' and demand the use of parts which may differ from

Quality assurance: regulatory capture

Self-regulation?

Industry could seek to deny information about costs to the defence ministry and its representatives, but could not similarly ward off the external evaluation of product quality.

Like their civilian counterparts, each defence producer was subject to control over product quality from above, through the department of technical control (OTK) subordinate to its own parent ministry. The OTK personnel reported upwards to the ministry, and were therefore nominally independent of the defence enterprise. However, they were maintained at the expense of the enterprise, and were rewarded from enterprise wage and incentive funds. Moreover, the interests of the ministry and enterprise in fulfilment of quantitative targets ran on largely parallel lines. Therefore, OTK inspectors were generally sympathetic to the problems of the enterprise and would collude with factory managers or submit to pressure from them. In civilian industry, for example, it is reported that inspectors commonly relaxed quality standards towards the end of the month when success indicators were about to be reported, or passed defective products provisionally, on the basis that deficiencies would be made good subsequently.⁴²

Useful illumination of the working of the OTK system is derived from a prewar attempt to reform it. In February 1938 M.M. Kaganovich (then commissar for defence industry) proposed to Molotov that the defence-industry OTK apparatus should be devolved from the ministerial level to the level of the enterprise. His argument was that the traditional system in which the OTK reported to the ministry shared responsibility for product quality between the ministry and the enterprise, providing an escape route for enterprise management in the case of product defects. If the OTK reported to the enterprise director, then it would at least be clear who was at fault in such cases.⁴³

The proposal was supported in principle by the defence commissariat, as well as by the majority of its purchasing departments.⁴⁴ But two dissenting voices were raised which seem more significant, in retrospect, than the supporters. Both argued for

the normal ones. It may then happen that different systems of standards are operative at the same plant. Thus, for example, at the Moscow aircraft factory *Znamia truda* (Banner of Labour), two standards were used simultaneously, one of them as required by the Ilyushin Design Bureau. Nothing of that sort can be imagined in civilian industry where a product will immediately be rejected by a plant if it provides for nonstandard parts where standard ones can be used'.

⁴² Agursky and Adomeit (1978), 23-4.

⁴³ RGVA, 4/14/1980, 36-47.

⁴⁴ RGVA, 4/14/1980, 50, 61, 67-9.

strengthening, not devolution of the existing system. One voice belonged to the chief of the Red Army engineering administration, who argued that quality control in the engineering industry, where OTK was already organised at the factory level, was just as deficient as in defence industry. In engineering factories, managers would simply override OTK personnel in the interests of quantitative plan fulfilment; where OTK was independent of the enterprise, this was less likely to happen. Another dissenter was the chief of the vehicle and tank-armour administration, who blamed the 'huge' *brak* in defence industry partly on the enterprise's drive for quantitative plan fulfilment, partly on the low status of OTK personnel, typically lower paid and less qualified than the workers over whom they exercised control.⁴⁵

In reality, it seems unlikely that any tinkering with the OTK system could have significantly affected outcomes. Kaganovich was right that enterprise managers would always seek to disperse the blame for negative results onto higher authority, which would collude with them to conceal and condone defective work. But this was an inherent feature of the system under which higher authority fixed output quotas and input allocations for lower levels, and depended little if at all upon the administrative level at which quality assurance was organised. Much more important than its level was its positioning with respect to the division between the supplier and the customer. For the defence supplier, control by the military user was much more to be feared than the gentler parental control of the supply ministry.

Voenpriemka -- the struggle for influence

Through *voenpriemka*, the military were able to enforce higher standards of quality and cost-effectiveness than characterised civilian industry products, while defence industry's privileged claim to first pick of high-grade personnel and materials was a necessary condition of its differential success in quality. It has been suggested that the result was to raise the average level of quality of defence products above the quality level of products in civilian use, so that the gap between Soviet and world standards of product quality were less in defence industry than in other branches. Dual-purpose products were subjected to more rigorous acceptance criteria by the military than by civilian agencies.⁴⁶ Emigrant testimony 'generally agree[s] that the voyenpredy were

⁴⁵ RGVA, 4/14/1980, 51, 59-60.

⁴⁶ According to Agursky and Adomeit (1978), 27, 'It is not at all rare that plants produce three different categories of product, with different assembly lines and different work brigades, earning different levels of pay but producing basically the same or similar items. The first, with the highest quality specifications and pay levels, is the military category; the second category of production is destined for export; the third and last category of product is for 'common' domestic use'. See also Holloway (1982), 351.

competent engineers, who engaged in more than just monitoring'.⁴⁷ By the postwar years Soviet military products had 'won respect throughout the world. Soviet tanks, aircraft, and small-arms weaponry are rugged, well-constructed, and capable of doing the task assigned'.⁴⁸

The result was characterised by CIA Director Admiral Stansfield Turner as inefficient in the sense that it relied on 'brute force' -- a combination of 'high levels of production and equally high rejection rates'.⁴⁹ Turner unwittingly echoed what the defence industry leader V.S. Emel'ianov thought about the Stalinist decree on product quality published in July 1940: 'three elements were essential to a solution of the problem of quality: persuasion, encouragement, and compulsion ... The decree ... was based on only one of our three elements -- compulsion'.⁵⁰

Nonetheless, defence industry was often cited by Brezhnevite commentators as a model for raising the quality of civilian products and management systems.⁵¹ Defence industry schemes for raising acceptance rates and aiming for zero defects were much touted in the 1960s and 1970s, but it is not clear how widely employed they became even in defence industry, and they certainly had little impact in the outside world of civilian producers.⁵² In fact these were not the first attempts to exploit defence industry experience in the civilian sphere. A precedent was Stalin's appointment of Emel'ianov, then a leader of the tank industry, as deputy chief of a new State Committee on Standards in July 1940.⁵³ Much later, the system of *voenpriemka* also became a model for raising the quality of civilian products under Chernenko, while the system of *gospriemka* applied to civilian products under Gorbachev was not only based on *voenpriemka* but headed by a former leader of the aircraft industry.⁵⁴

⁴⁷ Almquist (1990), 58.

⁴⁸ Scott and Scott (1979), 297-8.

⁴⁹ Joint Economic Committee (1977), 40. On high rejection rates see also Agursky and Adomeit (1978), 25; Holloway (1982), 325; Weickhardt (1986), 196. From the 1950s and 1960s Almquist (1990), 56, reported anecdotal evidence of rejection rates at individual defence factories ranging from 50 to 100 percent of annual output.

⁵⁰ Emel'ianov (1974), 000.

⁵¹ Weickhardt (1986), 197.

⁵² Campbell (1972), 590-6; Almquist (1990), 54-6. According to Agursky and Adomeit (1978), 54-5, however, new management systems in Soviet civilian industry were inspired by western civilian, not Soviet defence-industry precedents.

⁵³ Emel'ianov (1974), 541.

⁵⁴ Weickhardt (1986), 206-9; Almquist (1990), 56.

In practice, however, even in defence industry quality was never automatically assured. This was because enterprises always had two ways of meeting high quality targets. One was to allocate resources to raising product quality, as high-level policy makers intended. The other was to allocate resources to lowering the target by influencing the *voenpriemka* personnel to accept reduced product quality. Sometimes the latter was less costly to the firm.

In the years of the first five-year plan defence industry suffered from very high levels of rejected output -- for example, more than 50 percent for shells and rifle cartridges in 1931.⁵⁵ At this time it became common for defence enterprises to establish incentive funds for military representatives engaged in quality assurance and *voenpriemka*, which divided their loyalties. In August 1933 this became the subject of a report by G.G. Iagoda, then deputy chief of OGPU. In such cases the indicator forming the incentive payment was normally the quantity of output passed or accepted, 'thanks to which, naturally, attention to its quality is weakened'.⁵⁶ This report was followed a year later (on 1 September 1934) by a new Statute on quality assurance in defence industry, which, in addition to restating existing arrangements, added: 'the control and acceptance apparatus of NKVM is an organ of NKVM and the entire personal staff of this apparatus is maintained at the expense of NKVM and *does not benefit from any kind of rewards from the organs of industry*'.⁵⁷

This simple prohibition was evidently, however, not sufficiently specific. If defence managers were not allowed to give bonuses to *voenpredy*, they could still buy military representatives' goodwill with services in kind, and by sending glowing testimonials on their behalf to the defence ministry. In April 1938 the infuriated Voroshilov had to issue an order prohibiting his representatives from utilising 'absolutely any [*kakimi by to ni bylo*] *personal services* (apartment, furniture, motor vehicle, etc.)' supplied by enterprises where they were engaged in acceptance of output, as well as any compensation or reward, including *compensation for carrying out trials of factory products*; nor would he tolerate any good-hearted requests from factory managers for the defence ministry itself to reward its own representatives.⁵⁸

Voroshilov ended by demanding a new statute on the role of the military representative. The 'Statute on the military representatives of NKO in industry' which emerged on 15 July 1939 by decree of the Defence Committee of Sovnarkom stated correspondingly that military representatives were maintained at the expense of NKO and were to

⁵⁵ GARF, 8418/8/2, 37-48.

⁵⁶ GARF, 8418/8/175, 34.

⁵⁷ GARF, 8418/8/175, 5-9 (emphasis added).

⁵⁸ RGVA, 4/14/2196, 1-2 (emphasis added).

receive neither payment in cash or kind, nor any kind of favours, from defence industry.⁵⁹

The tendency to illicit collusion among agents is a familiar phenomenon when they are forced into continual negotiation of the conflicting interests of their principals. This collusion was not confined to the 1930s. From postwar interview data Arthur J. Alexander identified cases where military representatives covered up the supply of defective tank turrets, and welded submarine structures, as well as lesser items.⁶⁰ In all the cases reported, however, the collusion was detected and the military representatives were punished with prison sentences. We are left to speculate whether these cases were exceptional or were just the tip of an unsurveyed iceberg.

Conclusion

This paper shows that the military representative was the focus of a protracted conflict of interest between Soviet defence industry and the defence ministry. The defence ministry wanted cheap, high-quality weapons. Industry was usually willing to supply high-quality weapons, but not reliably or cheaply. Consequently the defence ministry was drawn into on-site monitoring of the production process and product quality, and became the most powerful customer in the Soviet economy. However, industrial managers fought to defend their autonomy against this encroachment. They employed several stratagems in doing so. One was to refuse defence orders. Having been drawn into defence production, they sought to weaken the capability of the defence ministry to verify costs by withholding information to the ministry and its military representatives, sometimes on grounds of its unavailability, sometimes on grounds of secrecy and need-to-know. In matters of quality, where the military representative could not be excluded, he could sometimes be bought, and industrial enterprises also pursued a strategy of regulatory capture.

Voennpriemka did not set up an agreed or objective standard of quality, but established a field of conflict and negotiation -- a three-cornered game between the defence ministry, the defence ministry's agent (the military representative), and the defence contractor, in which the rules themselves were not fully specified *ex ante*, and part of the game was to influence the way in which the rules evolved. The evidence suggests that this system worked, but not well. The system bought good-quality weapons for the Soviet armed forces, but failed to control costs and prices. It regulated the producers by coercive means, but was vulnerable to producer-regulator collusion. When it worked, it relied on high output and high rejection rates.

The system of *voennpriemka* was designed for a high-priority sector in a shortage economy, not for the whole economy. It depended for its limited success on the privileged access to material supply and skilled

⁵⁹ RGVA, 4/14/2196, 24-6.

⁶⁰ Alexander (1978), 19, 59n.

personnel enjoyed by a limited circle of defence producers. This could not work for all producers simultaneously. Under the circumstances it is not surprising that *gospriemka*, Gorbachev's attempt to generalise *voenpriemka* to the civilian economy, was ineffective.