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Forging Success: Soviet Managers and Accounting Fraud, 1943 to 1962

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Forging Success: Soviet Managers and Accounting Fraud, 1943 to 1962

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Abstract
Attempting to satisfy their political masters in a target-driven culture, Soviet managers had to optimize on many margins simultaneously. One of these was the margin of truthfulness. False accounting for the value of production was apparently widespread in some branches of the economy and at some periods of time. A feature of accounting fraud was that cases commonly involved the aggravating element of conspiracy. The paper provides new evidence on the nature and extent of accounting fraud; the scale and optimal size of conspiratorial networks; the authorities' willingness to penalize it and the political and social factors that secured leniency; and inefficiency in the socialist market where managers competed for political credit.

Keywords: Accounting Fraud, Performance-Based Incentives, Political Markets, Soviet Economy.

JEL Codes: D21, L51, N44, P21.

Forging Success: Soviet Managers and Accounting Fraud, 1943 to 1962

> I just wanted to say that pripiski are a system. And this system continues to operate despite decades of monitoring and so on. That's the first thing. Here's the second: In practice, criminal penalization of pripiski is a rare event, regardless of the level of the enterprise. And the third is that the gunfire on pripiski is concentrated on petty targets, on enterprises. The enterprises are certainly accountable for it but, as we raise our sights, [our gunfire] weakens when the target becomes more significant. Do you understand? (A Soviet statistical official, interviewed in 1989.[1])

Soviet managers worked from day to day within a target-driven culture. The Politburo set overarching priorities. From these, planners set ministerial and regional production quotas or "plans." Ministries and local authorities distributed the plans to factories, farms, and offices. In industry, construction, and transport, quotas were usually in rubles at "fixed" plan prices. Procurement quotas for foodstuffs and timber were in units of weight or volume. The ratio of performance to plan formed the rewards and reputations of most officials and managers.

Did managers hide plan failure? That this was commonplace is suggested by the emergence of a specialized Soviet-era jargon. Everyone understood the verb *pripisyvat'*, literally "to add on" fictional goods to the report of plan fulfillment. The noun *pripiska* (plural pripiski) was the value of "add-ons," the fictional goods included in the plan report.

Pripiski were a form of accounting fraud or "plan fraud." The accounting manipulations involved were not unobservable or unverifiable. They entailed straightforward lies, punishable in court. There was criminal responsibility because state plans had legal force, making plan fraud "deception of the state." In addition, there was often conspiracy. Deception on the part of any supplier tended to be immediately obvious to the industrial and wholesale buyers that relied on planned supplies to achieve their own quotas. The supplier's deception risked immediate exposure unless the buyer was willing to collude in it.

False accounting in the Soviet economy raises many questions for historians and social scientists. Historians of the Russian and Soviet economy have long been curious to know: How widespread and how serious were cases of pripiski? If widespread and serious, how did they affect measured output, living standards, and growth? How did agents collude, and how widely? And what stopped them from going further?

Questions also arise from a social-science perspective. Game theory tells us that the principal's problem should internalize the problem of the agent. We are studying a command economy under a harsh dictator who demanded truthful accounts from his agents. False accounts cheated him, and collusion among agents undermined his power. How did the dictator respond to the offense, and conspiracies to commit it, and what does this tell us about his rule?

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[1] Hoover Archive, Paul R. Gregory collection, Box 1 (document titled "Nachalo 3-go interv'iu"; the passage cited is on page 9).

In this paper, I first review the historical literature on Soviet managers. Second, I describe data now available from once closed Soviet-era archives. Third, I classify the types of fraud that they reveal. I consider, fourth, what we can infer about undetected crime; and fifth, about the fit between crime and punishment. Sixth, I discuss Soviet managers as rational agents, operating in an inefficient political market. The final section concludes.

1. The Literature

Rule breaking has been a persistent theme in research on managers in the Soviet command economy.[2] Soviet managers pursued multiple goals including personal income, promotion, and autonomy. Implicitly or explicitly, however, most of these resolved into one objective: Fulfill the plan (Kontorovich, 1986). For monthly output to fall short by a single percentage point meant loss of a bonus ranging from 20 to 50 (and in individual cases up to 200) percent of the factory director's basic salary (Berliner, 1957: 30-32). Plan success built incomes and promotions. Other members of the management team shared the gains, so plan success built loyalty and mutual obligation. Plan failure guaranteed negative attention; repeated failure could lead to reprimands, reassignments, and long-term career damage.

Whether managers wanted to "sleep peacefully" or climb the greasy pole, they had to show consistent compliance with the plan. A complex, unforgiving rule book was one of many obstacles. To fulfill the plan, honest and dishonest managers alike had to know which rules to break (Berliner, 1957; Gregory, 1990; Belova, 2001). They also needed to know who would cover for them if detection threatened, particularly because the authorities could not readily tell the difference between loyal and disloyal motivations for rule breaking (Gregory, 1990). A crucial factor was *ZiS*, an expression with a double meaning: It was a brand of luxury automobile, and also an abbreviation of *znakomstvo i sviazi*, networks of "acquaintance and contacts." Such networks were vulnerable to the prisoner's dilemma, but could be defended by traditional norms of mutual responsibility and risk sharing (Berliner, 1957; Ledeneva, 2007).

The Sovietological literature studied accounting fraud from press reports and informants among former Soviet economic personnel that emigrated to the West (Nove, 1957; Berliner, 1957; Granick, 1960; Grossman, 1960; Shenfield and Hanson, 1986; Linz, 1988; Gregory, 1990). A shared view emerged that small deceptions were widely practiced, but large ones were laden with risks of exposure and punishment and consequently rare. Joseph Berliner's respondents suggested, for example: "Taking a figure out of the air" was "a great crime and was rarely risked," but decisions were "frequently" taken to "prolong the day" (and month), which meant to "borrow" output from the next reporting period to fulfill this period's plan. From interviews with former statistical personnel, Stephen Shenfield and Philip Hanson concluded: "Pripiski are indeed widespread, but not as a general rule large." A former ministry official told them: "A

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[2] By manager, I mean primarily the factory director or farm chairman (or woman, but women were few). Under the Soviet system of unified personal leadership, the director bore undivided responsibility for all aspects of the production establishment. Under the director were deputies, functional chiefs, and section heads (e.g. Berliner, 1957: 13). These often played a supporting role in accounting fraud, but the director was nearly always the central figure.

serious person does not falsify report data, because falsification is very dangerous. Everyone is checking up all the time." Susan Linz came to a similar conclusion: Nearly all respondents (but not accountants!) "were quite familiar with falsified reports" but "uniformly describe falsifying only marginal magnitudes": "Nobody complains about small errors," but "Falsification on a grand scale is dangerous." At the end of the Soviet era, Paul Gregory surmised that the authorities "tolerate small deceptions, but they are unwilling to accept large ones."

Was plan fraud time-varying? In relation to the problem of measuring Soviet economic growth, Alec Nove (1956) famously proposed his law of "equal cheating." While undetected fraud would surely lead to overstatement of the *level* of Soviet output, he wrote: "Over the economy as a whole, there is no reason to suppose that Soviet managers and their accountants falsify more in one year than in another, and so the *rate of growth* is unlikely to be exaggerated on that account."

This law was never tested against hard evidence, however. Convenience and the lack of alternatives granted it what Gregory Grossman (1960: 133) called an "unmerited throne." Both Grossman and Shenfield (1983), another dissenter, speculated that plan fraud might vary in response to contingent factors such as varying plan tension: The more ambitious the plan, the more likely it was to be fulfilled with false reports.

Varying plan tension was not the only possible source of unequal cheating. Learning and selection could also be relevant, but were ignored until recently. Martha Lampland (2010) has investigated how semi-numerate farmers were taught to account to the state for costs and surpluses in socialist Hungary in the 1950s. She distinguishes between regular, provisional, false, and wrong numbers in accounts. Numbers are provisional if subject to correction, and false (but not wrong) if they have the function of hypothetical placeholders. She describes how false numbers were used to teach. When farmers learned to manipulate false numbers to suit their private interest, the numbers crossed over from false to wrong and became plan fraud.

In the Soviet context it seems likely that managers learned quickly to practice plan fraud after the Stalinist command system appeared at the end of the 1920s. No systematic study has been made of plan fraud under the prewar five year plans, but examples are not hard to find in the archives. These include investigations of elaborate plan frauds in the language of *pripisyvat'* and *pripiski*, indicating that the practice was already widely recognized. It is not possible to assess the incidence of such deceptions in the 1930s compared with the 1950s, however.[3]

In the Soviet setting, how did accounting fraud come to light? As Robert Porter (2005) has noted, white collar crimes involving collusion can be hard to detect unless an insider will blow the whistle. Whistle blowers played an important role in exposing management abuses in the Soviet economy (Lampert, 1983, 1985). Whistle blowing was facilitated by a plentiful supply of

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[3] At the Hoover Institution in the Archives of the Soviet Communist Party and Soviet State Microfilm Collection from RGANI (Russian State Archive of Contemporary History), fond 6 (files of the Soviet Communist Party Committee of Party Control), opis 1, file 34, folios 63-72 (starting with Decree of the KPK Bureau of July 10, 1934 "On misappropriation in the Urals-Caspian Fish Trust"), and file 75, folios 13-21 (starting with KPK Bureau draft decree "On falsification of analyses of pig iron at the Novotula Metallurgical Factory," dated June 22, 1937).

evidence of wrongdoing because, working under everyday Soviet arrangements, everyone was guilty of some infraction or other.

Proof of bad behavior went by the generic term *kompromat*, short for "compromising evidence." If the supply of kompromat was abundant, Soviet principals could exploit it in several ways. Obviously, they could use it to penalize those that merited punishment. Less obviously, they could keep it in reserve. One motivation was that those with a compromised past could be more easily controlled; for this reason superiors were often willing to recruit and promote subordinates against whom *kompromat* was held (Ledeneva, 2007, Gregory, 2009). More generally, guilty secrets did not necessarily mean disloyalty. The many burdens laid on their shoulders ensured that party members regularly had to break rules to get the job done, or "for the good of the cause." When a party member broke rules, their superiors commonly did not know whether the violator had acted from loyal or self-serving impulses, and whether their own best response was, in the phrase of Andrei Markevich (2007), "to punish or to assist." An atmosphere of impunity would encourage opportunism. But too hasty punishment would write off the party's investment in a probably loyal member. After the indiscriminate bloodletting of the Great Terror, Stalin had learned the cost of prematurely liquidating human capital.

The tendency to give the benefit of the doubt to violators was often accentuated by the complicity of superiors in the crime. Farm and enterprise managers were directly supervised by higher officials in the local party and government. To become known as effective organizers of production and procurement and so win promotion or avoid criticism, these higher officials had to be able to report the smooth fulfillment of plans by those below them. This could make them ready accomplices in plan fraud.

To combat this tendency, Stalin gave the role of truth-telling to a narrow circle of agencies specialized in planning, statistics, party discipline, and police work (Gregory, 1990; Belova and Gregory, 2002). One of these was the party's "control commission," responsible for malfeasance by party members (Getty, 1997; Markevich, 2007). But the control commission could not avoid discounting evidence of wrongdoing by the offender's political value. Belova and Lazarev (2009) use the postwar records of the control commission to show that the loyalty constraint on party members became as soft as the financial constraints on the enterprises they managed.

The authorities' tendency to forgive party violators was matched by failure to protect the whistle blowers that exposed them. Nicholas Lampert's pathbreaking studies (1983, 1985) showed that Soviet whistle blowing was an activity with few rewards and many penalties. While leaders praised and encouraged them in principle, whistle blowers were rarely popular figures. A character invented by Lampert (1985: 183) called whistle blowers "the totalitarians of the piece, spying on their colleagues and fellow workers and setting themselves up as agents for the prying eyes of the state." Since whistle blowers often complained about their peers and immediate superiors, who were much closer to them than the remote authorities to whom they appealed, retaliation and victimization were normal. And the authorities knew it. The law of June 1947 that increased penalties for theft of state property also criminalized failure to pass information to the authorities about crimes by others. James Heinzen (2007: 788-789) points to this as official recognition of the popular reluctance to inform on others.

It seems from this discussion that plan fraud was a source of gain to many, while those that could expose it and were inclined to do so were easily isolated and deterred – up to a point. This is certainly suggested by the one occasion when plan fraud became a public national scandal.

This was the "Riazan affair" of 1961. Its immediate origins lay in Nikita Khrushchev's decision to launch a campaign from the December 1958 central committee to match the United States in meat consumption per head of the population by 1965. To achieve this goal, meat deliveries nationwide would have to rise from just 8 to more than 20 million tons in a few years. The rural province of Riazan, 185 kilometers from Moscow, was chosen to lead the campaign.

The basic facts are well known; Oleg Khlevniuk (forthcoming) tells them from the inside. Building a brilliant career, Riazan party first secretary Aleksei Larionov made ambitious promises, which Khrushchev took at face value and endorsed in public. As intended, other regions followed this lead. At first, reports of meat deliveries showed astonishing increases. These were based partly on massive slaughtering of stock, including horses. In addition, deliveries were double-counted as they circulated on an inter-provincial carousel of growing scale and rising velocity. Future deliveries were included as if they had already taken place. In fact, the promises made could not be kept. Their eventual collapse was made more certain by the fact that everyone was making them at the same time.

The growing gap between apparent plan success and the failure of meat to appear on Soviet tables as promised was covered up for a while, but eventually crossed some limit of tolerance. In January 1961, a public scandal erupted. Larionov shot himself, while other regional leaders were disgraced; many were reprimanded, and a few were sent for trial. In May the government issued a decree imposing up to three years' imprisonment for false accounting. Khrushchev himself was tainted; "A shameful business," Leonid Brezhnev noted, preparing the Politburo speech that triggered the leader's dismissal in October 1964 (Kudriashov, 2006: 19).

Some simple hypotheses emerge from the literature. One is that low-level accounting spin was widely tolerated and possibly universal. Another is that high-level fraud was generally exposed, and was therefore rare. For the most part the survey evidence that confronted these hypotheses reported impressions rather than data. The literature is also suggestive of questions that went unanswered because the evidence did not allow them to be asked: If minor frauds were tolerated, at what point did major fraud begin? Was this threshold always in roughly the same place, as the law of "equal cheating" implied? When significant frauds were caught, were they always punished, or were they sometimes forgiven?

2. The Data

Until now, much of our evidence on accounting fraud in Soviet enterprises came from interviews with Soviet emigrants. Emigrant testimony had limits. The Soviet authorities permitted only low-level personnel to emigrate, and respondents often knew of relevant events only at second hand. Soviet press reports were carefully analyzed, but these were censored beforehand and selected for release only to support the public policies of the time.

The historical records of the Soviet courts and party investigators, found in the Hoover Archive, offer several advantages over the contemporaneous evidence. They are direct records

of the phenomena that interest us. They have not been selected to limit disclosure or bias public perceptions. They are amenable to quantitative analysis.[4]

Our new evidence is of two kinds. First, on July 16, 1946, the Soviet government issued a secret decree "On pripiski to state reporting on fulfillment of plans." The decree defined plan fraud as a "criminal, anti-state practice" and condemned the "liberalism" shown towards it by prosecutors and the courts. It called for "resolute struggle" against offenders. Between October 1946 and June 1947, 160 trials took place around the country. Of 249 persons prosecuted between October 1946 and January 1947, 242 were convicted.[5] Offenders were typically given jail time. Four were sentenced to death (with the centre's approval). A handful received suspended sentences or terms of forced labor with loss of pay at their place of regular employment; the centre criticized these more lenient sentences and appealed them.

The justice ministries of all fifteen union republics were required to submit monthly reports to Moscow on implementation of the decree. Surprisingly, only nine did so (defaulters were the Armenian, Georgian, Kirgiz, Latvian, Lithuanian, Moldavian, and Tadzhik republics), but the reporting regions accounted for more than 90 percent of the population enumerated in the 1959 Soviet census. In these monthly reports 59 cases were selected for summary. Summaries were typically brief; in a few lines, not always completely or consistently, they gave the names and positions of those convicted, some idea of the value of the offense, and sentences passed. The 59 summaries form the first of two datasets that are mainly used in this paper.

The second dataset arises as follows. Soviet managers were generally party members. Party members could not appear in court. If they were to be charged with a crime, they had first to be expelled from the party (Shenfield and Hanson, 1986). Before expulsion, they had to be investigated. While initial investigation was generally done by local (ward, city, and province) party committees, the party control commission had oversight of these processes. Records in the Hoover Archive show that, during the late 1950s the control commission received more than 10,000 petitions annually from party members about injustices done to themselves or abuses done by others. The commission selected around 1,000 a year for investigation, redirecting the rest back to local authorities.[6] Only a handful of the complaints investigated concerned plan

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[4] Full details are provided in unpublished appendices to this paper, available from http://go.warwick.ac.uk/markharrison/data/fraud/.

[5] Hoover Institution, Archives of the Soviet Communist Party and Soviet State Microfilm Collection: GARF (State Archive of the Russian Federation), fond R-9492 (files of the USSR Ministry of Justice), opis 1a, file 495.

[6] Hoover Institution, Archives of the Soviet Communist Party and Soviet State Microfilm Collection: RGANI (Russian State Archive of Contemporary History), fond 6 (files of the Soviet Communist Party Committee of Party Control), opis 6, file 1165, folios 21-22 ("Report of Work of the Committee of Party Control of the CPSU Central Committee for the Period from the XX to the XXII CPSU Congresses (1956-1961)").

fraud, however: 101 for the entire period from 1943 to 1962.[7] Investigators rejected 13, leaving 88 that they considered to be substantiated. These form the second dataset.

The party control reports follow a narrative format, typically listing the original complaint, the results of prior investigation (if any), the facts as seen by the investigator, and recommendations for further action. Such reports were much more detailed than the trial summaries, usually occupying at least one page and sometimes many pages. The narrative format also gave rise to considerable variation in what facts were covered.

The two datasets are described and compared in Table 1. In addition to basic enumeration, the table gives some indication of the composition of cases in each dataset by production branch, geographical spread, the numbers and positions of offenders, and the value of public losses and private gains.

The production sectors (agriculture, forestry, transport, industry, and construction) accounted for all cases. One half of trial offenses originated in agriculture, compared with one third of party investigations. This difference is only partly explained by the longer time span of the party control dataset. Across the country as a whole, agriculture and forestry employed half the Soviet workforce in 1950 (TsSU, 1968: 20), but this share still stood at two fifths at the time of the first postwar census in 1959 (TsSU, 1962: 104).

There is a striking geographic mismatch. Table 1 shows a single measure, the mean distance of offenses from Moscow. The trials in our dataset were on average twice as far from the centre of power as those investigated by the party centre. The finer grain can be picked out by comparing the distributions of both datasets with that of the Soviet 1959 census population. In Table 2, the census population is divided into quintiles by distance from Moscow of the provincial (oblast, krai, or autonomous republic) centre with which the census associated them. The 59 trials and 85 party investigations in which cases were proven and location is known are distributed across the same provinces. We see that the inner quintile of the census population that lived in Moscow and surrounding provinces contributed more than half the party investigations, yet less than one tenth of the trials. The census population's outer quintile, which was scattered across a vast territory from the Urals to the Pacific, provided one third of trials, but only a handful of investigations.

While some offences involved a single accused, the average trial involved three offenders and the average party investigation involved five. There was wide variation, and some cases were very large. The biggest trial in our data placed 12 defendants in the dock; the biggest party investigation involved 76 officials (on my count) that shared guilty knowledge of the offense.

While collusion was normal, the accomplices that went to trial with the ordinary managers were less important than those that featured in party investigations. Party investigators often found that higher party and state officials shared guilty knowledge of the violation. But these superiors were rarely indicted and put on trial beside the managers themselves. This suggests a weakening of the prosecutors' gunfire as the target became more prominent.

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[7] Hoover/RGANI, opis 6, files 1583, 1652, 1706, 1765, 1815, and 1816.

How much was lost – and gained – as a result of plan fraud? In each dataset some cases allow evaluation of the plan shortfall that was covered by fraud, as a proportion of the plan or in rubles. The amounts involved could be substantial. The mean fraud before the courts amounted to 25 percent of the plan (over various production profiles and periods of time), and that under party control to 22 percent. Over a different subsample, the mean duration of fraud in the party investigations was found to be 7 to 8 months.

Public losses can also be valued in rubles. The sums at stake are either given in the documentation, or are estimated by imputing ruble values to losses listed in physical units. When this is done, the two datasets show fraud on very different scales. The average loss reported to the courts was almost 125,000 rubles (up to a maximum of nearly 1.4 million). Average losses reported in party investigations were larger by an order of magnitude, at nearly 1.7 million rubles (the maximum was 16 million). In both cases this was much more than spin or upward rounding. For comparison, the average monthly wage of a Soviet public sector employee was around 570 rubles in 1946, rising to 1,000 in 1961 (Nove, 1966).

The private gains from plan fraud could be considerable but were generally less than public losses. Private gains were most often illegal bonuses arising from false claims to have fulfilled the plan, but they were sometimes taken as goods diverted or given in bribes; these are valued at state prices (from Jasny, 1951, 1952; Harrison, 1996) and included in the sums shown in the table. The private gain could be shared within the management team, not all of whom would necessarily share the guilt. Taking this into account, the mean values reported were still substantial sums: nearly 80,000 rubles per trial (with a maximum of 400,000), and more than 170,000 rubles in party investigations (with a maximum at over one million).

The representativeness of these two datasets is an issue, given that we will subject them to statistical tests. They were selected in different ways. The 59 trials are essentially a 37 percent sample drawn from the 160 total of trials known to have taken place across the country from October 1946 to June 1947. The sample is clustered at the republican level as follows. Each republic that reported was expected to supply some narratives. The smaller republics, with less to report, detailed around three quarters of their cases with little selection. Russia, listing 121 trials in total, selected only one quarter of them for detailed narrative. As a result, the Russian trials are the most highly selected and least represented (apart from those minor republics that did not report at all). Selected on what criteria? Plausibly, those of salience, suggesting that the Russian sample might include relatively more cases that were notably serious or complex.

The 101 party control cases were selected differently. The underlying population was the unknown number of complaints of plan fraud that reached Moscow each year. Of that number, an unknown proportion was selected for investigation. The selection criteria are unknown too, but might well have been based on salience, lengthening the size distribution's right tail. We see the number found in the files. We can be fairly sure that this was less than the number of all cases investigated, because the party control commission report of work to the twenty-second party congress of October 1961 lists a few cases that are not found in its own files.[8] These and

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[8] Hoover/RGANI, 6/6/1165, folios 23-25.

other cases might have been abstracted from the files because they were of particular interest; some cases may have been filed under other offenses, or misfiled, or destroyed. What can be said is that our data are based on all records filed in the proper place.

The time profile of cases is of great interest. The postwar trials were rushed through within a short period. Chart 1 shows the dynamic of all cases before the Russian Federation courts over four months of 1946 and 1947; these accounted for four fifths of all trials held across the country. From October 1946, which may have been the peak month, the frequency of trials declined monotonically. By the late spring of 1947 most republics, if they continued to report, cited one or two cases per month or none at all. In June 1947 the RSFSR minister of justice asked to be released from the obligation to report monthly on the grounds that the number of fresh cases had fallen to an insignificant level, and none involved offenses committed since the 1946 decree.[9] The last document in the file is a report from Kazakhstan dated December 1947: "No cases of this category have come before the Kazakh SSR courts since April 1947 ... I ask for your instructions on the necessity of informing you about the cases indicated above."[10] By inference, the background or normal frequency of trials involving plan fraud was zero.

The postwar trials of plan fraud followed exactly "the general pattern of Soviet campaigns – an initial upsurge in arrests and convictions, followed by a decline back to, or below, the initial levels" (Heinzen, 2006: 136). For a Stalinist campaign, however, its scale was tiny. This was a country of two hundred million citizens, with tens of thousands of farms and factories, yet a nationwide drive against accounting fraud could produce at most 40 prosecutions a month in the largest of its republics. In contrast, the campaign against bribery launched in May 1946 saw more than 5,000 sentenced during 1947 (Heinzen, 2006). Even this was dwarfed by the campaign that followed the June 1947 law on theft of socialist property: In 1948, Soviet courts jailed more than 300,000 offenders for six years or more (Gorlizki, 1999).

The profile of cases under party control is very different. Chart 2 tracks their frequency by the year (or years) in which they occurred (not the year in which they were reported, because some reports are undated). Two things stand out. First, the flow of cases was again meager: less than five a year on average. An explanation may be that nearly all cases were concluded locally; those that reached Moscow and were selected for investigation are surely the tip of a much larger iceberg. Second is the time variation. There are three distinct peaks, the first in wartime when the data start, then in the last full year of Stalin's rule (he died in March 1953), and the last and most dramatic in 1960. After each peak, the series falls back to zero or close to that.

Does Chart 2 show periodic crackdowns (as in Chart 1) or crime waves? For several reasons we see them as crime waves. First, the primary purpose of party control was investigation; we will show that penalization was an afterthought. When Soviet leaders wanted exemplary punishment, they unleashed the police and prosecutors. Second, crackdowns penalize what was

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[9] Hoover/GARF, R-9492/1a/495, folio 47 (RSFSR minister of justice Basavin, memorandum to USSR minister of justice Rychkov N. M., June 18, 1947).

[10] Hoover/GARF, R-9492/1a/495, folio 51 (Kazakh SSR, deputy minister of justice Bespal'ko L., memorandum to USSR minister of justice Rychkov N. M., Dec. 4, 1947).

previously tolerated, and so reduce standards for identifying violations. In a crackdown, the unit value of recorded offenses should tend to fall, therefore, at the same time as the number increases. In our data, however, there is a strong *positive* correlation between the number of cases in a given year and their unit value measured by the public loss in rubles. On average, each extra case in a year was associated with 10-percent-plus growth in unit value.[11]

The party control commission itself admitted that the sharp rise in cases of plan fraud at the end of the 1950s was recorded in spite of its inattention, not because of heightened awareness. In 1961, the commission apologized that it had "received warning signs about the facts of pripiski and deception in agriculture but did not give these signs the necessary focus, did not collate the documents to hand, and did not inform the central committee about this issue."[12] In short, a crime wave happened when no one was looking.

3. Classifying Deception

What were typical features of Soviet accounting fraud? Evidence comes from the detailed narratives left by party control investigations. These show that Soviet managers employed a range of stratagems to defraud the planner. Table 3 classifies them by their position relative to plan constraints and the specific risks to which they were exposed. This framework owes its spirit to the classification of cash flow positions of agents with fixed debt service obligations in financial markets originally proposed by Hyman Minsky (1982, 1986) but departs from it in nomenclature and other obvious ways.[13]

Managers faced a plan obligation π in each period. Compliant managers met it with real output $x = \pi$ in every period. All managers were exposed to supply and plan volatility, however: Planned deliveries might not show up, and the output quota might suddenly be increased.

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[11] The unit of observation is the offense/year, so violations that took place over more than one year are distributed over those years as separate observations, and there are 59 observations. The public loss of the *i*th violation in rubles is $value_i$ and the number of violations contemporaneous to *i* (and including it) is n_i. Then $\ln(value_i) = 11.3^{***} + 0.116^{***}n_i$. Significance, based on robust standard errors: *** $p < 0.01$. Data and STATA log files are available from http://go.warwick.ac.uk/markharrison/data/fraud/.

[12] Hoover/RGANI, 6/6/1165, folios 25-26 ("Report of Work …").

[13] In Minsky's framework *hedge* positions were vulnerable to income shocks, *speculative* positions to income and interest rate shocks, and *Ponzi* positions to income, interest rate, and equity shocks. Market fragility arose when, given persistent cheap borrowing and asset appreciation, speculative and then Ponzi players crowded out hedge investors. For purposes of analysing market economies, mainstream economists greeted this idea with indifference or scepticism (Flemming, 1982; Goldsmith, 1982; Melitz, 1982). Of the criticisms made then, only Goldsmith's ("financial crises … have almost disappeared since the early 1930s" and "are a childhood disease of capitalism, not an affliction of old age") looks obviously wrong with hindsight. In fact, the global financial crisis that began in 2007 has stimulated a Minsky revival (Yellen, 2009; Roubini and Mihm, 2010). I make no claims for the comparative advantage of Minsky's approach in its original setting. It is useful, adapted to the present context.

Sooner or later, all faced the prospect of plan failure. When failure threatened, they selected from the stratagems summarized in Table 3 and detailed below, with their associated risks.

3.1. Self-Insurance

Hidden reserves were the Soviet manager's first hedge against supply and plan volatility (Berliner, 1957: 95-107). Excess stocks of equipment, materials, and even land and labor could be mobilized or traded in an emergency. In order to be held in reserve, such stocks had to be hidden, partly because they were unauthorized and so illegal, partly because the planners, if they knew of their existence, would require that they were taken out of the reserve and put to use. Because of this, reserve stocks limited managers' exposure to supply and plan risks but at the same time exposed them to the risk that insiders would defect and blow the whistle.

In our data, a few managers were found to have met plan obligations by using surplus inventories that were hidden from the planner. While the production quota was met, the plan for productivity was attained only by understating the denominator, and the law defined this as deception. A textile factory near Vladimir (Case 233, 1952) fulfilled the plan using above-plan equipment. A factory for building materials near Moscow (Case 245, 1953) hired workers above the plan to meet its quotas. A cotton farm in Uzbekistan (Case 253, 1958) used undeclared acreage to overstate yields.

In such cases the manager had apparently taken all necessary precautions to meet the production quota without having to call on outsiders. The insurance provided by hidden reserves was traditionally effective; perhaps it is for this reason that such cases were infrequently reported. If so, why did the insurance fail in a few cases? In all cases in our data that are classified under self-insurance, the fraud came to light because the manager was engaged in multiple violations, not limited to accounting fraud, and an insider blew the whistle on corruption, nepotism, or other abuses.

3.2. Coinsurance

Some managers expected to cover their plan obligations honestly in the long run, but faced an immediate shortfall from available supplies. They avoided an explicit default by going into debt to the buyer for output that should have been delivered but was not yet produced. Such managers resembled Minsky's (1982) speculator that expects to cover long term liabilities but survives in the short term only by placing new debt, accepting the associated exposure to interest-rate shocks. In the Soviet context borrowing from the buyer was illegal, because it deceived the planner. The buyer could blow the whistle but instead chose to collude with the seller's deception in the short run, and so share the seller's risk, for the sake of good will or some other consideration. Meanwhile, both sides expected the seller to return to full plan compliance in the long run.

A problem with this stratagem was that the intention to repay could be derailed by a wider range of shocks than those to which self-insured managers were exposed. The latter were vulnerable only to volatility in their own supplies and plans and to insider defections. Coinsured managers were additionally exposed to plan shocks to the buyer. An unexpected increase in the

buyer's output quota, for example, could reduce the buyer's gain from cooperating to conceal the seller's shortfall and the willingness to share the seller's risk.

Co-insured frauds followed a single template, which we call the "work-in-progress" scam. Nearly all such cases took place in an industrial setting. In wartime the cities of the Urals were major centers of war production. On August 31, 1943, tank factory no. 255 reported from Cheliabinsk to Moscow that the August plan was 100% fulfilled (Case 205, 1943). In truth, the August plan was completed only on September 15. This had the natural consequence that, on the last day of September, 44% of the monthly plan was still outstanding.

Typical of such schemes was collusion by the regional authorities, whose reputation as local guardians of the plan was at stake. During September the Cheliabinsk party stepped in, not to expose the shortfall but to encourage the factory to make it up quietly. The provincial party secretary tasked the director to complete the September plan by October 5, i.e. to achieve 44% of the monthly quota in five days. On October 2, the factory reported 100.3% fulfillment for September to Moscow. But the September quota was actually filled on October 15. Meanwhile, the factory's output as reported to Moscow in those first two weeks of October was zero.

Effective frauds relied on creating an appearance of success and winning the collusion of counterparties and superiors in maintaining this appearance. Sometimes, the very appearance of success created unexpected tensions. On October 6, the minister of the tank industry congratulated the director of factory no. 255 on winning third prize in a nationwide inter-factory "socialist competition." This was a probable cause of the conspiracy's unraveling: The party control commissioner reported that the workers started grumbling when they heard about the prize, because they knew it was unmerited.

3.3. Uninsured Deception

Consider the manager that faced a plan shortfall and had no expectation of making good the shortfall in the future. Such a manager might lack both self-insurance and an outside partner to share risks. One outcome was then simple fraud. The additional risk created by simple fraud came from the buyer who, without hope of future compensation, and regardless of goodwill, might not be deterred from blowing the whistle. Simple fraudsters hoped to move on from the scene of the crime before it was noticed, or relied on escaping notice because of the buyer's neglect, indifference, or incompetence.

A common simple fraud was illegal substitution of goods of inferior quality. The goods delivered could be inferior simply by being unfinished, but this differed from the work-in-progress scam by the fact that there was no intention to finish them afterwards. Quality shading happened in all branches of the economy. Case 261 (1960) involved large-scale fraud in construction. This came after party leader Nikita Khrushchev gave a major commitment to resolve the postwar urban housing shortage; a decree of July 1957 promised to eliminate the shortage in 10 to 12 years (Smith, 2010). There was pressure for quick results.

A large-scale programme was soon under way to build apartments, kindergartens and schools in Cheliabinsk. But progress was more apparent than real. Of the 1960 plan, more than half was finished during December (the same happened in 1959 and 1958). In the last days of the year, it is reported, the city party and government leaders illegally accepted as finished 36

apartment blocks of 50,000 square meters that lacked floors, plastering, water supplies, drainage, heating. In some cases there were no roofs. In others paintwork, glasswork, sinks, and toilets were missing. This had also happened before. The cost of repairing housing newly added in 1959 was 11 million rubles, and 16 million for that added in 1958. A new boarding school and four of six new kindergartens were closed or never opened. The scandal became public, because residents were up in arms. In face of press criticism, the provincial party had not only taken no action but had defended those responsible.

Investigation found that the city administration had used false reports to receive large illegal bonuses; in 1959, for example, the city executive had illegally downsized its own construction plan, failed to complete it properly, and shared out a million-ruble bonus for achieving it.

Quality shading also took place in industry and agriculture. At brick factory no. 5, a forced labor facility of the interior ministry near Moscow (Case 237, 1953), the commandant included more than a third of a million bricks in the plan although they had not been graded or certified for quality. In a rural setting (Case 262, 1960), local officials of Kalinin (now Tver') province allowed nearly 20 tons of meat that was unfit for consumption to be included in planned wholesale purchases, hoping to cover themselves by then selling much of it back to the farms that first supplied it. In this case, unlike some that we consider below, the goods existed and actually changed hands, but were not of the quality that matched plan requirements.

There were other kinds of simple fraud. A transport depot (Case 227, 1949/50) invented fictional journeys for its drivers. A furniture factory (Case 241, 1952), reported its output at provisional plan prices that were higher than the prices that were subsequently confirmed. Many of the cases in our data where the offense is unclassified may also have been simple frauds, but we don't have enough detail to be sure.

3.4. Joint Ventures

At the highest level of plan fraud were joint ventures. At first sight these resembled coinsurance schemes. The starting point was the manager's inability to meet a short term plan obligation, without the hope of making it up in the future. The seller bought the buyer's cooperation, not by exploiting goodwill, but by taking the buyer into full partnership. The joint venture internalized the problem of how to fulfill the buyer's plan, given the seller's shortfall. As a result, the seller no longer had to worry about the buyer's defection.

Joint ventures tended to unfold in a rural setting; some involved many players in complementary roles. There were two main types, which we call the "buy-back" and the "carousel." In the buy-back fraud, the seller met the plan with a receipt obtained from a state buyer, without goods having changed hands. This receipt was known either as a *bestovarnaia kvitantsiia* (commodity-less receipt) or a *sokhrannaia raspiska* (storage certificate) under which the seller agreed to "store" the goods for delivery at a later date. In this way the sale took place and was reported as complete for purposes of the plan, while delivery was postponed.

If delivery took place later, as agreed, the result was the same as the work-in-progress scam. Typically, however, there was no later delivery. Farm produce that was "stored" in the fields as a standing crop, for example, could be spoiled before harvest, or produce held in farm inventories might be consumed before delivery. A supply shock like that, if unanticipated, converted the co-

insured manager into a defaulter. But in some cases, buyer and seller clearly shared the expectation of a default at the outset, so "storage" was a cover for produce that did not and never would exist. The contingency of default was written into the contract as a penalty clause: The defaulting seller was obliged to buy the undelivered goods back from the buyer at a premium price – the retail price, which equalled the state procurement price plus the retail margin and turnover taxes. In this case the scheme was a joint venture from the outset.

The result was to keep up most appearances. The farmer was reported to have sold produce in planned quantities at plan prices to the state buyer and could show the false receipt to prove it. The state buyer was recorded as having bought the goods at the (low) state buying price and then sold the same goods at the (high) state retail price. Through the joint venture, both sides fulfilled the plan. There would be negative signals, however. The state retail system would be making its profit on fictional sales to the farms, not true sales to the population. Farms would show deteriorating balance sheets, and would be unable to compensate farmworker households in cash for work done. While retail sales would appear to be buoyant, urban households would have unspent cash and bare tables.

Many complaints reached the party controllers about plan fraud by local officials of Ovruch ward, Zhitomir province, in the Ukraine (Case 258, 1960). During 1960, the rural provinces of the western Ukraine were planned to supply 607,000 tons of potatoes to the industrialized eastern provinces. On November 1, short of 147,000 tons, the Ukraine government decided to allow the plan to be met with storage certificates for potatoes that would be shipped out the following spring. On November 12, the Ovruch ward leaders met the local collective farm managers and receipted 2,000 tons of potatoes at 340 rubles per ton (the state buying price), for which the state procurement office paid them 680,000 rubles. In case of default, however, each farm would compensate the local procurement office at the retail price of 700 rubles per ton.

In the spring of 1961, deliveries fell due, but the promised stocks were gone, so instead the farms paid 1.4 million rubles to the procurement office. The farms could now show they had met the potato supply plan, and the procurement office could show 2,000 tons of potatoes bought and sold at the planned margin. On the downside, the farms had lost 720,000 rubles from their balance sheets, while the workers of eastern Ukraine were hungry.[14]

Many people shared guilty knowledge of this offense. The documents name five (two party officials, two government officials, and the chief of the cooperative procurement office). The party control investigation documented similar scams that were ongoing in other wards across Zhitomir province and involving other products (milk and butter).

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[14] Khlevniuk (forthcoming) reports the impact of agricultural pripiski on the balance sheets of the collective and state farms of the Riazan region: "The kolkhozes and sovkhozes of Ryazan went into bankruptcy. On 1 October 1960, whereas kolkhoz bank accounts amounted to 2.6 million roubles, kolkhoz indebtedness came to 350.2 million. According to figures produced in November 1960, the monetary income of kolkhozes in 1960 was expected to amount to 491 million roubles, whereas expenses, including the redemption of debt, were 1,040 million roubles. Since the kolkhozes could not pay for the work of their peasants, the latter in many farms stopped going to work."

Whereas buy-back frauds involved goods that were counted although they did not exist, carousel schemes involved goods that did exist but went round again and were counted twice. The 1958 procurement plan for the Krasnyi Kholm ward of Kalinin province included 38.4 tons of dairy products (Case 252, 1958). In December of that year, local party and government officials set out to manage a looming shortfall. They convened a meeting and instructed a dozen farm managers to pool their cash and send out agents to buy up dairy products from retail stores and depots in Moscow, Leningrad, and neighboring towns. The local agricultural inspectorate advised farm accountants not to obstruct cash payments when farms bought dairy products on the side. The consumer union gave passes to farm representatives to travel by road and rail to do this. This operation yielded 1½ tons.[15]

The result was that the plan was fulfilled with products that were sold to the state twice. As with a buy-back, the farms lost financially since they bought butter at the state retail price and resold it at the lower state buying price – but their managers willingly paid this premium, and other transaction costs, to show compliance with the plan. It was households in the neighboring towns that suffered a real loss, since butter intended for their tables was diverted to the Krasnyi Kholm operation; consumption was double counted, as well as production.

Where was the risk? The joint venture had the defining feature of a Ponzi scheme that appearances were maintained by paying off a growing number of insiders at the expense of outsiders while the money lasted. Joint ventures, like Ponzi schemes, also had a tendency to spread. Other things being equal, the partner in a joint venture had hedged more risks than an uninsured simple fraudster. But other things were not equal, and in practice the participants substituted away from reduced risk to larger scale and greater numbers. Scale was facilitated by coordination, often done by a third party, the regional political leadership. Joint ventures also inspired emulation. Synchronous schemes in adjacent regions could create correlated risks that would not have existed for deception on a smaller or less coordinated scale. As in the Riazan affair, a single province might be able to buy enough meat from neighbors to fulfill the plan, but not all could do this at the same time.

3.5. Overview

Table 4 summarizes the frequency and other attributes of the different classes of accounting fraud. Self-insurance was the least common class to be reported, possibly because self-insurance generally worked. Most classes of fraud were more prevalent in industry, transport, and construction, but joint ventures were the exception, developing nearly exclusively in the countryside. The scale of deception can be measured in proportion to the plan and in rubles but samples are small and many observations are missing. As one might expect, the scale of fraud

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[15] The ease with which enterprises were able to encash money to execute buy-back and carousel scams may be surprising to some. Traditional accounts of the Soviet financial system (e.g. Garvy, 1966) emphasized the separation of anonymous cash from traceable non-cash bank credits, used to monitor production and trade. In practice, as Kim (2002) showed from Gosplan records, enterprises and farms were able to encash large sums from institutional bank deposits when they needed, and the need to fulfill the plan was clearly sufficient.

seems to have increased as managers undertook more complex schemes. The same can be said of the private returns to deception, but only up to a point. Joint ventures in the countryside, it would appear, were put into effect more "for the good of the cause," or more precisely to promote team reputations and political careers, than to line private pockets.

Chart 3 shows that, as might be expected, the network behind joint ventures was much larger on average (more than 12 persons) than for any other scheme (up to 5 persons). This difference is smaller but still visible if we exclude two outliers (Cases 210, with 64 participants, and 268, with 76). We return to network size in the next section.

Finally, the composition of offenses changed markedly over time. As Chart 2 illustrated, the party records show three main waves between 1943 and 1962. Chart 4 shows the composition of each wave. In wartime, nearly all cases involved coinsurance. Some unclassified cases could have been simple frauds, but joint ventures were unknown. In the late Stalin years, during and after the judicial crackdown, self-insured and uninsured frauds began to feature; the first joint ventures appeared. During the Khrushchev thaw, joint ventures became widespread and crowded out other fraud types. (Unclassified cases also became more common, either because simple frauds were becoming more common, or because investigators economized on description as their workload increased.) We return to this pattern below.

4. Undetected Fraud

Our datasets contain only those cases where frauds were detected. What can be said about undetected frauds? We look at two aspects of concealed offending, its possible prevalence, and the networks that concealed it. Specifically, we look for gaps in the data that are suggestive of concealed fraud. These gaps tend to support two hypotheses. One is no surprise: detected offenses were the visible tip of a vast iceberg of widespread petty fraud. The other is that managers' networks were most successful in concealing fraud when they were of optimal size.

The Soviet-era witnesses, reported earlier, consistently described plan fraud as frequent and pervasive – "a system." If managerial deception was truly widespread, it must be that most violations went unreported. The Soviet Union was a country of tens of thousands of enterprises and a hundred million workers. It is a puzzle, therefore, that the files of the party control commission accumulated less than a hundred cases in twenty years. Perhaps these were selected from many more cases at lower levels. But even the purge of 1946/47, after raking over evidence back to 1943, yielded just 160 trials across the whole country.

The existence of a vast underwater mass of unreported violations is not something we can confirm directly from the data, but evidence from other settings is helpful. From experiments, Mazar and Ariely (2006) conclude that dishonesty is psychologically costly, and the internal cost function is nonlinear. Most people are comfortable with rearranging the truth to their own advantage in small ways, but only up to a point. They face a significant psychological loss if they take deception across some threshold where major fabrication begins. Consistently, all the interview-based studies that were cited earlier volunteered a clear distinction between "minor errors" (commonplace and acceptable) and "falsification on a grand scale" (rare and stupid).

The positioning of the threshold between major and minor offending may be a variable social norm but, wherever we find it, actions that stop short of it ought to be much more numerous than those that go beyond it. Daniele Fanelli's (2009) meta-analysis of scientific fraud illustrates this. Fanelli found that 2 percent of scientific workers (on average across 18 studies) admitted to fabricating data to obtain desired results, while 34 percent, or seventeen times as many, admitted to less serious-sounding malpractices such as dropping data points.

If our data conformed to the distribution found by Fanelli, the transition from minor to major fraud ought to occur between the 90th and 95th percentiles of offenses ranked by value. The reported facts are completely otherwise, however. Table 5 shows offenses in both datasets ranked by loss to the state in percentages of the plan and in rubles. At the 90th percentile, frauds amount to half or more of the plan and hundreds of thousands or millions of rubles. It would be absurd for this to define the major/minor borderline. Take the 10th percentile of trials, or the 5th percentile of party control cases, as more realistic borderlines of major offending. At these levels frauds were still more than 1.5 percent of the plan and thousands or tens of thousands of rubles. If a significant fraction of major frauds went unreported, and if the true number of minor offenses below the line was ten or twenty times the true number of major ones above it, then the true number of minor offenses must have exceeded the reported number by two or more orders of magnitude.[16] We see only the tip of the iceberg.

Other gaps in the data confirm the presence of successful concealment. The literature maintains that bare-faced lies were vulnerable to exposure. Managers could create a personal safety zone, however, by maintaining networks of collective responsibility in which each member would cover for the others. Suppose this cover was increasing in scope of the network, but diminishing in size. Scope would have aided concealment because buyers, sellers, subordinates, and superiors could all vouch for one other in their different roles and collude in a consistent story. A network that was too small would lack the scope to cover infractions. Beyond some point, however, each additional member made it more costly to introduce newcomers, distribute rents fairly, enforce loyalty, and screen out potential traitors. A network that was too large would tend to unravel under the strain of the prisoner's dilemma.

With diminishing returns and increasing costs, collusive networks must have had an optimal size. Given this, what distribution of offenses should we expect, conditional on detection? We predict two types of offense to be reported disproportionately: those based on networks of either insufficient scope for concealment, or excessive size. And this is what the data show.

In Chart 5, trial cases are distributed by the number of offenders on trial. On the left, 37 trials with just one or two defendants make up three fifths of the 59 total. The middle part of the distribution, with three to five defendants, is notably thin with only six cases. To the right is a fat tail of five cases involving six to 12 defendants. In fact, the distribution is bimodal. The underpopulated 3 to 5 range suggests where collusion was more effective at concealment.

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[16] Let p be the share of minor violations in the reported distribution and π the true share. Let r be the proportion of major violations that was reported. Then the reporting rate for minor violations is $r \times \frac{p(1-\pi)}{\pi(1-p)}$. If $p = \frac{1}{20}$, $\pi = \frac{17}{18}$, and $r = \frac{1}{3}$, the figure is about one per thousand.

The size distribution of party control cases in Chart 6 shows 39 cases on the left, with just one or two offenders, making up nearly half the 86 total. The middle segment, with from three to five accused, is somewhat thicker than in Chart 5, with 34 cases; the right-hand tail, with 14 cases, is thin but very long, extending to networks as large as 64 and 76 accused persons. In fact, these 14 cases involved more than half of all the guilty persons that came under party control.

In both charts, an Anderson-Darling test rejects the hypothesis that the data points are drawn randomly from a log-normal distribution.[17] Among all the conspiracies reported, there are too many large and small ones and not enough of medium size. By inference, these are the ones that were best equipped to escape detection.

To summarize, the crime data, although gathered conditional on detection, are suggestive of unreported offending in two ways. First, the frequency of large frauds in the data encourages us to infer a far larger number of petty violations that were overlooked. Second, major offending was more likely to be overlooked when the offenders were efficiently organized; this meant a collusive network large enough to cover but not so large as to risk defection.

5. Crime and Punishment

5.1. Zero Tolerance
The data show us the criminal justice system in two phases: zero tolerance, and toleration. The normal regime was one of toleration; we see zero tolerance only in 1946/47 and 1961. Under zero tolerance, however, all offenders that could be found were punished, often severely. In cases that went to trial, we have three questions. How much of the punishment was fitted to the crime, and how much reflected other factors? Given that informal networks enabled the crime and also helped to conceal it, did penalties respond to the element of conspiracy, measured by the number of people tried in each case? And to what extent did political or social factors intervene in sentencing?

In Table 1, we saw that prosecutors' tendency to go to trial was skewed geographically by comparison with the party's tendency to mount an internal investigation. A possible explanation is protection. Those that lived within a day's travel of the capital might well face party investigation and censure, but were better protected from the full rigor of the law. Those that lived in the remote interior were less likely to attract the party centre's attention but, when the law was invoked, they also had less protection. Personal protection might come in two ways,

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[17] Alternatively, the selection of cases for detailed report might have been biased. We can test this in the trials data, where the scope for selection was greatest in the Russian reports. The Russian justice ministry listed the largest number of trials and reported the smallest proportion (about one quarter, as discussed above). The bimodal distribution might be an artefact of the Russian authorities selectively reporting the largest, most complex cases, while the non-Russian authorities reported more cases with one or two offenders. In fact, the non-Russian trials do include a higher proportion of cases with one or two offenders. If we consider only Russian cases, however, the distribution remains bimodal. As reported in the note to Chart 5, it still fails the normality test applied. So, a selection that might be biased towards more complex cases still shows the predicted deficit in the number of cases of middle size.

both linked to the nature of a centralized dictatorship. Cover might be provided by social connections with individual members of the Moscow elite; these would be easier to maintain from nearer the centre. Or cover might come from higher political value to the regime, reflected by placement in the key regions and industries of European Russia and the capital.

We use the data to estimate a regression model of sentencing. Suppose that in determining the offender's sentence the trial judge weighed the value of the offense, and so the offender's separable contribution to it, softened the penalty in relation to the political or social value of the offender, and then added to it for the element of "common purpose" among the offenders. For the jth offense this means:

$$penalty_j = \alpha_0 + \alpha_1 accused_j + \sum \beta_i V_{ij} + \sum \gamma_n X_{nj} + \epsilon_j$$

where the number of *accused* stands for the role of conspiracy, the *V*s are measurable aspects of the value of the offender, and the *X*s do the same for the offense. With the trial (rather than the offender) as the unit of observation, and with alternative measures of individual penalization on the left hand side, on the right hand side the *X*s are all divided through by the number of *accused* in the case.

Coefficients of primary interest are then α_1 (expected to be positive) and the βs (expected to be negative), with the *X*s controlling for the value of the offense.

As dependent variables we use both the average and maximum sentence in each case. These measures had characteristic advantages and drawbacks. The advantage of the average sentence in a case is that it includes all the information available about individual penalization. The drawback is that we lose some data points because of death sentences (which can hardly be averaged with jail time) or because of missing information about the sentences of minor defendants. As for the maximum penalty, think of it as the sentence given to the person identified by the court as the ringleader. An advantage of the maximum jail term is that it allows us to use almost all data points – including death sentences, which are equated with the maximum ten-year jail term at the time. Also, the focus on the ringleader's sentence creates more variation against cases with sole defendants. A drawback of the maximum jail term is that each data point contains less aggregate information and more individual noise.

The full list of dependent and independent variables for which results are reported is then:

Penalty   Average or maximum sentence in each case, measured in jail years.

Accused   Number of defendants on trial in each case. This variable tests the hypothesis of an additively separable punishment for conspiracy.

Ln(*distance*)   Log kilometers from the provincial centre to Moscow. This variable tests the hypothesis of additional penalization of less valuable defendants.

Russia   A dummy variable equal to one for Russia and zero elsewhere. This variable tests the hypothesis of leniency for more valuable defendants.

Xplan   Value of fraud in percentage points of the plan (10 observations), divided

by the number of *accused*. This variable tests the hypothesis of additional penalization of higher-value frauds.

Xloss   Value of fraud in thousand rubles lost to the plan (29 observations), divided by the number of *accused*. This variable tests the hypothesis of additional penalization of higher-value frauds.

Xgain   Value of fraud in thousand rubles gained to the accused (20 observations), divided by the number of *accused*. This variable tests the hypothesis of additional penalization of higher-value frauds.

There are many missing *X*s. To make the most of the observations that we have, and to avoid restricting the analysis to small subsamples, I set missing *X*s to zeros. Then, for each X_n I create a dummy variable that is set to zero when X_n is reported and 1 when it is not. These variables control for any systematic relationship between the penalization of defendants in each case and the fact that the given X_n is missing from the report of that case.

Because both dependent variables are restricted, I use tobit regressions with the average and maximum sentence left-censored at zero and the maximum also right-censored at 10 years. Table 6 reports marginal effects.[18] Column 1 suggests that average jail time went up by one year for each 16 percentage points (*Xplan*) of plan fraud per defendant. Social loss (*Xloss*) and private gain (*Xgain*) in rubles are not significant and *Xgain* has the wrong sign. The effect of distance from Moscow is significant and positive: Each doubling of log kilometers added more than 7 months to average jail time. (But there is no significant Russian border effect.) Controlling for these, the number of *accused* is also significant: Each additional co-conspirator added 5 months to the average sentence. This shows that, conditional on the value of the offense and the value of the offender, penalization was responsive to the size of the ring.

The two *V* (political value) variables are not mutually exclusive, but in practice they are somewhat collinear. In columns 2 and 3 we try them separately. In both columns the effects associated with the *X* variables are similar in size. In column 2, when *russia* is dropped, the log of *distance* is significant as before and the effect on sentencing is slightly increased. In column 3, when *distance* is dropped, *russia* becomes quite significant, suggesting that moving a case into the Russian republic reduced the average sentence by 15 months. The effect of *accused* is stable in size and consistently significant.

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[18] Other measures and measurement issues are reported in Appendix 5. Appendices, data and STATA log files are available from http://go.warwick.ac.uk/markharrison/data/fraud/. The sector in which the offence was committed might also be relevant, but the expected effect is ambiguous. A higher priority sector might be associated with a higher value of the offense, and equally of the offender. A sector effect was tested in regressions and found not to be significant. Issues that we cannot pursue for lack of data include ethnic and gender discrimination. Of 163 defendants, only 12 (in three trials) were identifiably female. The median jail term given to a woman was 3.5 years compared with 3 years for male defendants.

In the second half of the table we switch the dependent variable to the maximum sentence in each case. Was the ringleader penalized for leading the ring, over and above the punishment for his or her share of the fraud? If so, conditional on the same factors as before, the marginal effect of *accused* on the maximum sentence should be significantly positive and larger than for the average sentence, reflecting the ringleader's extra responsibility.

In column 4, *accused* has a large, significant marginal effect: Each additional co-conspirator added more than one year to the ringleader's time in jail. When tested simultaneously, the effect of *distance* is small and insignificant, while that of Russia is large and negatively signed; being inside the Russian boundary buys the ringleader nearly two years of leniency. When we try *distance* and *russia* separately (cols 5 and 6), only *russia* is significant. It is consistent with what was shown before (cols 1 to 3) that there is a spatial pattern to discrimination, but for the maximum sentence borders appear to be more important than distance.

Comparing the two sides of the table, the effects of *Xplan* and *Xloss* are consistent in sign and size but not in significance. That of *Xgain* is inconsistent in sign and size but positive and sometimes significant in determining the maximum penalty: In columns 4 to 6, the maximum sentence rises by one year for each 12,000 rubles of private gain for the average defendant.

To summarize, the courts gave out severe punishment for accounting fraud, including many jail terms that were at the maximum the law permitted and more than one death sentence. Evidence that punishments were fixed to fit the crime is fragile; at best, tariffs were variable. In contrast, the evidence is robust that collusion was penalized over and above the penalty for fraud; the average sentence went up by 3 to 5 months, and the maximum sentence by around one year, for each additional member of the ring.

Finally, evidence that social connections or political value was protective is consistently present, but there is a lack of consistency in exactly what it was that mattered. Some evidence points to protection weakening with distance from Moscow. Other evidence is suggestive of a border effect, with lighter sentencing inside the Russian republic. Either way, the gunfire of the courts weakened as the target moved closer.

5.2. Toleration

With some idea of what happened when offenders were brought to trial, we return to the prior stage of party investigation. In normal times, before involving the courts, offenders were first brought before the party. Party controllers could endorse or recommend various penalties. At the lower levels, penalties were applied via the ministerial employer, or by the party itself. These began with a range of ordinary and "severe" reprimands and warnings that were handed out freely, and did not necessarily have any long term consequences for the person reprimanded. A more serious sanction was "removal from post," which sounds like dismissal but actually meant reassignment within the ministry. Reassignment could be to a position of similar or lower status. Reprimands and reassignments were a routine hazard in the life of every Soviet manager (Berliner, 1957: 48-50, 254-255).

More serious penalties placed the offender outside the protection of the ministry and the party. Both were serious, but exclusion from the party was more so because there were many ministries but only one party: The party was the more encompassing institution. Excluded from

"the system" of the ministry, the manager had no hope of internal reassignment but could look for similar work in another ministry. Exclusion from the party ended the offender's career and could be the prelude to prosecution. Cases sent to the prosecutor did not always go to trial, but those that did could end in imprisonment if not worse.

When the party controllers found plan fraud to be proven, they accepted outcomes that were lenient and lacked any systematic relationship to the severity of the violation. This is despite the fact that, as reported in Table 1, the average party investigation involved nearly twice as many offenders as the cases sent for trial after the war; in party investigations, the average public loss was measured in millions of rubles (compared with hundreds of thousands in trial cases), and hundreds of thousands of rubles were diverted into private pockets (compared with tens of thousands in trial cases).

An average tendency to forgiveness was expressed in light penalization. Four out of five party cases were settled by reassignment or some lesser penalty. In the remaining one fifth of cases, the ministry or party removed its protection. It was exceptional for prosecution to be even considered; this happened in only one case out seven.[19]

The tendency to forgiveness worked in such a way that penalization was random as well as light. The outcomes of the party investigations cannot be shown to contain any information about measurable aspects of the offense reported. Measures of penalization are uncorrelated with the value of the offense, the size of the offenders' network, the class of deception, and so on. No sector, distance, or border effects can be found.[20] It is not the case that the party's gunfire weakened as the target moved closer or became more prominent. It was rare to point the gun at anyone, let alone fire it.

The general pattern was for party investigators to use any excuse not to take further action. When it was reported that a case had already been dealt with under party or administrative sanctions, they hastened to close the file. When cases were exceptionally sent to the prosecutor, there was little guarantee that a trial would result. Some prosecutors showed reluctance to pursue offenders, dropping charges if the offenders had moved on, or had already been disciplined by the party or the employer.[21]

In our story so far, the Soviet regulation of plan fraud had two regimes: zero tolerance and forgiveness. Under zero tolerance, accounting fraud could be penalized at the same level as homicide or treason. Conspiracy to commit plan fraud was also penalized systematically. Over the long intervals in between outbreaks of zero tolerance, however, there was just toleration, with typical penalties limited to reprimands and reassignments.

Three features of this institutional setting actively promoted dishonesty. First was the high power of management incentives at the margin of plan fulfillment. With large fractions and

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[19] For further details, omitted here for reasons of space, see Appendix 6.

[20] For further details, omitted here for reasons of space, see Appendices 6 and 7. Data and STATA log files are available from http://go.warwick.ac.uk/markharrison/data/fraud/.

[21] A limited sample of cases from 1948/49, possibly selected by failure to prosecute, is described in Appendix 8.

even multiples of their income at stake, along with autonomy, reputation, and career concerns, Soviet managers had the strongest incentives to report plan success, regardless of the truth. Evidence from the PricewaterhouseCoopers (2009) global crime survey indicates that corporate accounting fraud is increasing in the performance-based fraction of management pay. In 2009 the survey obtained responses from more than 3,000 firms in more than 50 countries. Firms were asked about the performance based element in senior executive pay. Only 6.6 percent of those with no variable element experienced accounting fraud. The figure went up to 10.5 percent of firms reporting a variable element of up to one half and as much as 15.5 percent of firms reporting a variable element greater than one half.[22] This evidence suggests that Soviet incentive policies placed most managers in the zone of elevated risk.

Second, the Soviet setting was one of low trust and intrusive monitoring: "Everyone is checking up all the time" (Shenfield and Hanson, 1986). Experiments reported by Schulze and Frank (2003) point to two effects of monitoring. It deters dishonesty, but at the same time it undermines intrinsic honesty. This evidence suggests that the first effect of Soviet monitoring arrangements was to increase the manager's fear of being caught out in a lie. Conditional on the probability of being detected, on the other hand, the second effect may have led Soviet managers to attempt deception more frequently.

Third, in the Soviet economy monitoring was intrusive – but ineffective. The contribution of Jeffrey Grogger (1991) was that certainty is more important than severity of punishment in deterring crime. Mazar and Ariely (2006) point to the self-deception that is encouraged when cheating goes unchallenged, forming the belief that it does not matter and will always be overlooked. The evidence is that the Soviet setting provided the worst of all worlds. Detection rates were low and punishment (conditional on detection) was light – unless the offender was caught up in rare and unpredictable campaigns of zero tolerance.

Weak, random, low-probability penalization makes no sense in terms of the mainstream economics of crime since Gary Becker (1968). It makes more sense in terms of the Soviet postwar political economy. Even if plan fraud caused pervasive losses, Soviet managers still represented scarce human capital. Plan fraud also exposed the declining confidence of the authorities in their own decisions. Plan violation was disloyal only if the plan was sacrosanct. But even Stalin admitted that the plan could be mistaken. If there was a mistake in the plan, the first-best solution was to correct it, for example, by reducing a plan that was infeasible. But a mistake was sometimes hard to admit. If mistakes could not be corrected, plan fraud might be second-best for everyone. Better for the manager to lie and others to collude than have the

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[22] In 2009 the PricewaterhouseCoopers survey obtained responses from 3,037 firms in 54 countries. The number of firms that reported their senior executive pay structure was 2,614, of which 499 had no variable element, 1,805 reported a performance related element of up to 50% and 310 firms reported a performance related element over 50%. The survey took place during a sharp downturn in reported sales. The incidence of accounting fraud was insensitive to the trend of sales, however. Admitting to experience of accounting fraud over the year were 11.7 percent of the 1,882 firms reporting a downturn, similar to the 10.9 percent of the 1,155 that did not report a downturn. Thanks to Faisal Ahmed and Tony Parton for this information.

dictator own up to a mistake; better to cheat than force everyone into the permanent state of mobilization and overstrain required to fulfill every plan honestly at any price.[23]

This is seen clearly in the Riazan affair of 1961. Given Khrushchev's unrealistic promises, large-scale plan fraud was not the worst possible outcome. The plan would have been met more honestly if Larionov had slaughtered more and cheated less, but this would have led eventually to a greater disaster for consumers. It was welfare-improving in the long run to fulfill an inflated plan with lies rather than meat.

6. Unprincipled Agents

What kind of people committed accounting fraud and how should we model their behaviour? As far as one can tell without psychological profiles, Soviet managers that cooked the books look not dissimilar to their market-economy counterparts. White collar criminals tend to be male; they are older and have more human capital than violent criminals (Lochner, 2004). Their motivations can be group-oriented or self-centered (Braithwaite, 1985). As long as crimes carried out in the interests of the group or corporation are not excluded, corporate criminals are as intelligent as law-abiding managers, as risk-averse, and as conscientious (or more so); they just have fewer scruples (Blickle, Fassbender, Klein, and Schlegel, 2006).

Among Soviet managers we can infer a range of motivations and capabilities. Some offenders look so incompetent that it is hard to be sure what their purpose was. They lied about the plan because they were too lazy or chaotic to do anything else; plan fraud covered up a general lack of control of costs, quality, and human resources. More competent offenders fell into two types. Some were risk-loving corporate sociopaths; they faked plan success as a cover for systematic abuses and asset stripping.[24] Others were group-centered team players who resorted to deception "for the good of the cause," when lying was the only way left to meet promises, build networks, and promote the interests of their ministry, region, farm, or firm.

It is easy to rationalize accounting fraud as classical optimization. A simple model captures some but not all features of the patterns in the Soviet data. Regardless of their varied personal goals, managers first had to report that the production quota was met. For this, they had to optimize over several margins simultaneously. The quota could be met with production or deception or a mixture; both were costly. Think of managers dividing a fixed endowment of resources between the two. In a world of diminishing returns, implications are straightforward. All managers lie all the time to some extent; complete honesty is never optimal. A mix of production and deception always results in lower total costs than if only truth is told. The

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[23] The complicity of Soviet leaders in lying about results is captured in a well known anecdote (Lewis, 2008). Lenin, Stalin, Khrushchev, and Brezhnev are passengers on a train. The train stops and won't move. Each has a proposal. Lenin: Mobilize volunteers to push the train. Stalin: Shoot the driver. Khrushchev: Take up the track behind the train and lay it in front. Brezhnev: Draw the curtains, play music, and pretend the train is moving. The story also suggests that there are worse things in politics than pretence.

[24] When group-oriented crime is excluded, white collar criminals turn out to be less conscientious and more tolerant of risk than law-abiding executives (Collins and Schmidt, 1993).

amount of deception should vary with supply and plan shocks. A higher quota raises production and deception simultaneously. An adverse supply shock, such as a harvest failure, reduces production and increases deception. The government can manage fraud by making it more costly to insure, for example by increasing penalties (and rewards for whistle blowers); this raises marginal deception costs, making production more attractive.

This framework can be extended to other margins, including time. In a dynamic setting, the rational manager's first priority was to secure a lower quota before setting both production and the optimal lie (Berliner, 1957: 76). While planners aimed to lift performance, managers aimed to hold down planners' expectations (and so future plans). Their best choice was to limit achievement to the plan (Weitzman, 1980). If so, 100 percent should be the maximum report as well as the minimum. This prediction is borne out in the party control data: Despite generous rewards for overfulfillment, managers that made false claims rarely went above the plan. Across 16 cases where this figure is given, the minimum report was 100 percent and the median was 100.9. Thus, bringing in time makes the model richer without changing its principles.

Some patterns in the data are hard to explain using this model. The data show waves of plan fraud. Within each wave, as we noted, frauds became more valuable as well as more frequent. With each wave new classes of plan fraud spread and then disappeared, one after another, from coinsured to uninsured schemes and then joint ventures. The simple model implies that changes in the extent of dishonesty are driven mainly by exogenous shocks. But the waves in the data have no obvious causal triggers in the simultaneous variation of economic conditions.

Classical optimization presumes that each agent's information and choices are independent. Suppose instead that Soviet managers, operating in a fog of political uncertainty, watched each others' behavior so as to improve their information about the likely costs and benefits of plan fraud, with results that are now standard in the literature (Banerjee, 1992): copying and herding. There is ample evidence of copying behavior from other contexts that are relevant to accounting fraud. Glaeser, Sacerdote, and Scheinkmann (1996) observe that variations in crime rates across U.S. cities and precincts have been much larger than any variations in possible causal factors. They associate this with social interactions that cause personal choices over bad versus good citizenship to become locally aligned. They conclude from the data that petty crime is more susceptible to neighborhood effects than major crimes such as homicide.

A study of Harvard MBA students by Scott Snook (forthcoming) finds that future elite executives fall into three groups of roughly equal size. One third of students appears to operate from a largely transactional view of the world (It's okay if it benefits me); at the other extreme, another third has reached a fully-developed, self-authored adult perspective (It's okay because, having fully-weighed the costs and benefits to others, I have decided that it is). The middle third is predominantly other-directed (It's okay if others do it too). For the middle group, the problem is to decide whom to copy; their role models can come from either end of the spectrum (or each other). This study suggests not only that people differ in their moral norms, but some will differ according to the people they happen to be with.

Analogies from behavioral finance suggest ways in which time varying market standards can result from adverse selection or conformism (or both in so far as those threatened with

deselection can survive by lowering standards).[25] In Raghuram Rajan's (1994) credit cycle, lenders share reputational incentives to reduce the quality of their products in good times, while borrowers have no incentive to object. In Minsky's (1982, 1986) capital markets, given rising values and persistently low interest rates, the composition of agents tends to shift adversely as speculators and then Ponzi borrowers progressively crowd out hedge borrowers; then, as incomes and equities collapse in the market meltdown, remaining hedge and speculative borrowers are converted involuntarily into Ponzi players. Minsky's taxonomy of market players may or may not be powerful as a critique of capitalist finance, but still provides insight into how, out of a relatively blue sky, at the end of the 1950s the socialist market in which Soviet managers competed for credit went suddenly into a bust.

A feature specific to our period, illustrated in Chart 7, was dramatically declining volatility of real aggregates. With the 1950s, Soviet managers' economic environment entered a period of stable growth without precedent in their experience. "New era" thinking received official endorsement. In 1959 Nikita Khrushchev declared that the Soviet Union had finished building socialism, and would have a communist society of material abundance by 1980 (Titov, 2009). Some western experts expected the Soviet Union to catch up with the United States in two or three decades.[26] In these conditions, it would be natural if planners became more trusting in false claims, and if managers became more confident that their own deceptions would not be exposed by adverse shocks. Add copying, so that managers gave more weight to the behavior of others than to their own information, and everything was in place for a bubble.

While perceived risks of plan fraud may have been falling over time, true risks were surely increasing in the number, value, and complexity of schemes. We saw evidence that the detection risk rose with network size, beyond a point. As networks multiplied, correlated rule breaking could have observable aggregate consequences. A few inflated plan reports might be lost in the general noise of good and bad luck. Many such claims made at the same time, however, would eventually be exposed by supply breakdowns and consumer protests. Exposure was still more likely when an entire sector (such as agriculture) was caught up.

The Riazan affair erupted at the end of the 1950s in the context of a stable economy and steady growth. Our data show that the scandal was preceded by an asset price bubble, where the overvalued asset was managers' promises to meet Khrushchev's unrealistic targets for agriculture. Plan commitments in the Soviet political market, like securities in a financial market, were ultimately backed by real commodities – the agricultural and industrial products that

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[25] The economist Stanislav Strumilin perfectly illustrated this choice under the pressure of drafting the first Soviet five-year plan when he declared: "Better to stand up for high rates of growth than sit down [in jail] for low ones" (Mau, 2002).

[26] Hoover (1957: 270): "If our estimate is reliable, it will be roughly a decade and a half before the productivity of the Soviet economy could equal that of the United States at the present time. It would take somewhat longer to attain the present per capita level of production in the United States." Hoeffding (1959: 396): "At current relative rates of growth, Soviet industry is steadily narrowing the gap between its output and that of its self elected main rival. Any comfort to be drawn from the thought that the gap is still wide gets colder year by year."

managers promised to supply. This market was not efficient. Shared false beliefs could drive the value of promises temporarily away from fundamentals.

When the backing failed, the Riazan bubble burst. At first there was panic, arising from widespread loss of trust. To resolve this socialist "credit crunch," toxic assets – inflated promises, the conmen that had made them and the fools that had bought them – had to be identified and liquidated. This was not so difficult because managers could not legally leverage plan obligations or sell them on, making the socialist credit market simpler and more transparent than capitalist finance. At lower levels, the rural apparatus was purged – up to a point. At the top, the problem was the complicity of Khrushchev himself. It took more than just the Riazan affair to get rid of him. There were more charges against him by the time of his dismissal in 1964, but Riazan was still remembered.

Under Leonid Brezhnev, normal business was resumed. Plan fraud never went away, as subsequent Soviet interview projects recount (Shenfield and Hanson, 1986; Linz, 1988; Gregory, 1990), but we have no comparable data for later years.

The Riazan affair is a story of unequal cheating. What does it imply for the study of Soviet growth? Unequal cheating had the potential to affect the data on which all estimates of Soviet economic performance, Soviet and western, official and alternative, have relied. In the present study there is good and bad news. Low-level plan fraud was probably endemic and persistent. This might be good news: The more it persisted, the less it would vary over time. As for long term growth measures, the impact of some schemes was self-limiting: self-insured and coinsured schemes, for example, juggled output from present to future but kept within intertemporal constraints. Finally, high level fraud, when detected, was supposed to be taken out of the plan, leading to corrected figures. This action is noted in many reports by party controllers. Indeed, published figures for the production of meat in the Soviet Union in 1960 and 1961 show a small decline compared with 1959 (TsSU, 1972: 224). So far, so good.

The bad news is that high-level fraud was both highly variable and scandalous. There was at least one peak on a scale that could have had aggregate consequences. This peak caused chaos; months passed while attempts to cover it up gave way to full disclosure. The affair was politically so damaging that before long the authorities tried to draw a line and move on. So, it is hard to be confident that all traces of the bubble were removed from official data before publication. Worse, once published, Soviet data were never revised.

Putting the good and bad news together, plan fraud is an unlikely source of bias in long run growth rates but particular years, including the year-on-year variation that is important for dynamic testing, may have been unpredictably affected by uncertain amounts.

7. Conclusions

Our data on accounting or plan fraud in the Soviet enterprise in the 1940s and 1950s suggest six main findings. First, Soviet plan fraud covered a range of schemes that varied in scale, complexity, risks, and frequency. Frequency was time varying for two reasons. The court records of 1946/47 show a surge of cases driven from above by a decision to crack down on plan fraud. In contrast, the party investigations of 1943 to 1962 give evidence of three successive waves in

which the frequency and value of plan frauds rose together, driven from below by changes in the underlying propensity to offend.

Second, the data are suggestive of a background of undetected plan fraud that was pervasive but low-level. Effective plan fraud on a larger scale depended on collusive networks of a size that was efficient for concealment, with enough scope to provide mutual protection but small enough to maintain cohesion.

Third, while the law was often broken, it was infrequently enforced. There were two regimes, zero tolerance and toleration. Toleration was the norm: Most offenses that were detected were treated as disciplinary violations, and were punished lightly and unsystematically. Beyond some limit, a growing sense of damaging excess could drive the authorities to crack down. The result was that toleration alternated with infrequent outbreaks of zero tolerance, marked by sudden and severe penalization.

Fourth, regardless of the regime, the high value of managers to the Soviet regime tended to encourage forgiveness. Even during crackdowns, there was leniency for socially more connected or politically higher-value offenders.

Fifth, plan fraud was managers' best choice when faced with a plan shortfall under the constraint of a compulsory production quota. At such times, managers optimally switched effort from production to deception. In normal times they could expect fraud to go undetected or attract little worse than a reprimand or reassignment, which were routine events.

Sixth, the periodic waves of plan fraud suggest a role for imitative behavior. Managers engaged in correlated risk taking. Their superiors overinvested in deceptive claims. In the second half of the 1950s the number, complexity, and value of frauds grew rapidly. A bubble developed in the inefficient socialist political market where plan promises were traded. Overvaluation led to collapse when the bubble burst and normal times came to a sudden stop.

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Chart 1. Trial cases in the Russian courts, October 1946 to January 1947
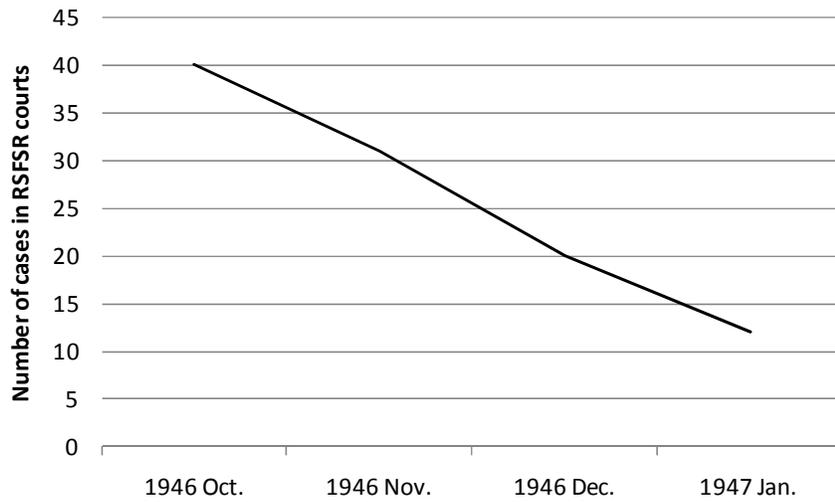
Source: Hoover/GARF, R-9492/1a/495, folio 36 (USSR Ministry of Justice, inspector of general courts Chugunov, "Obobshchenie sudeb'noi praktiki po delam o pripiskakh k gosudarstvennoi otchetnosti po vypolneniiu planov," April 1947).

Chart 2. Party control cases, 1943 to 1962
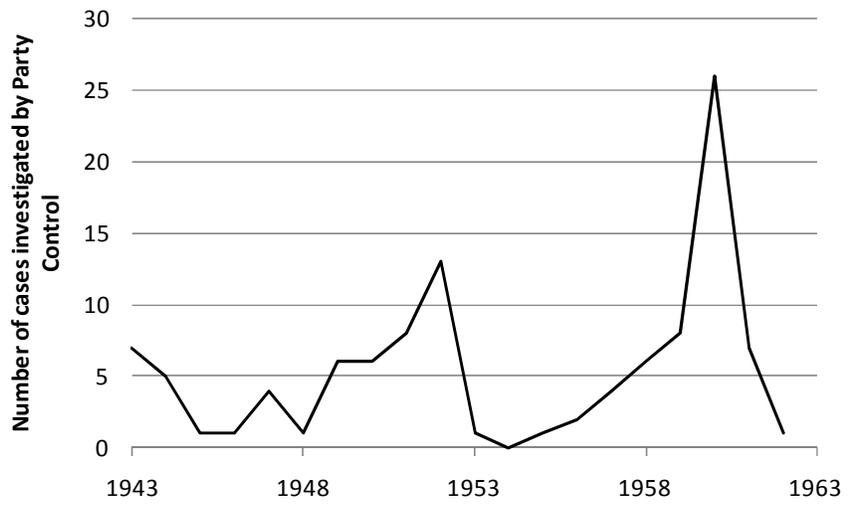
Source: Appendix 2.

Chart 3. Party control cases, 1943 to 1962: Network sizes by type of fraud
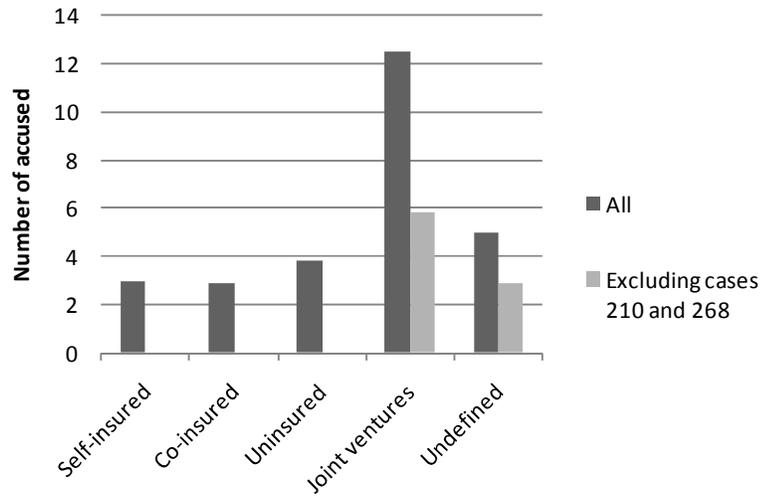
Source: Appendix 2.

Chart 4. Party control cases in three waves, by type of fraud

Source: Appendix 2.

Chart 5. Trial cases distributed by size of network
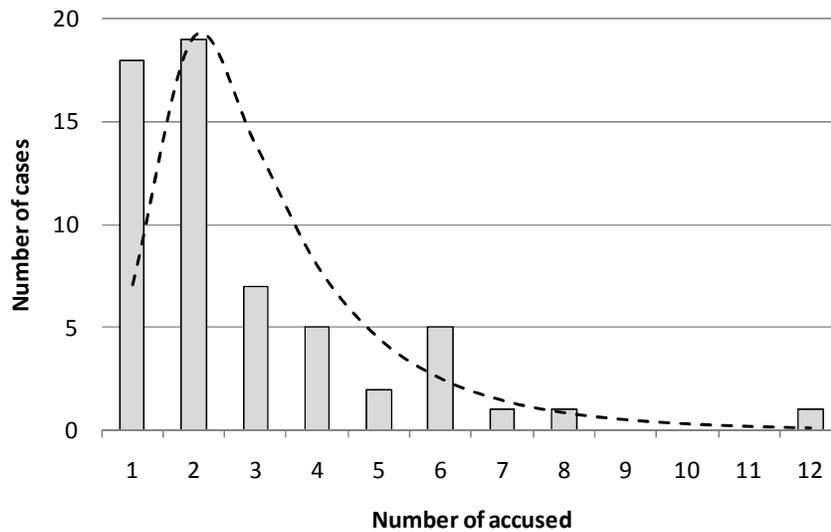
Source: Appendix 1.
   Key: The dashed line is a log-normal probability plot. Results of Anderson-Darling tests for normality, using log values, are:

	All	Russia only
Average	0.788	0.960
Standard deviation	0.671	0.636
N	59	30
A^2	2.303	1.230
P-value	0.000	0.003

The P-value is the probability of wrongly rejecting the null hypothesis (that the observations are drawn from a log-normal distribution). The "Russia only" column shows that the distribution would still fail the normality test, if non-Russian observations were excluded.

Chart 6. Party control cases distributed by size of network:
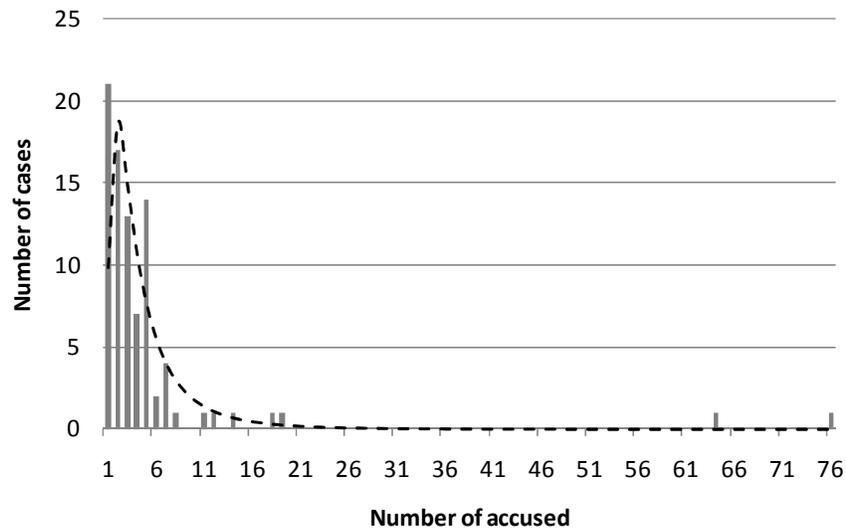
Source: Appendix 2.

    Key: The dashed line is a log-normal probability plot. Results of the Anderson-Darling test for normality, using log values, are:

Average	1.088
Standard deviation	0.905
N	86
A^2	2.115
P-value	0.000

The P-value is the probability of wrongly rejecting the null hypothesis (that the observations are drawn from a log-normal distribution).

Chart 7. Real volatility in the Soviet economy, 1928 to 1962
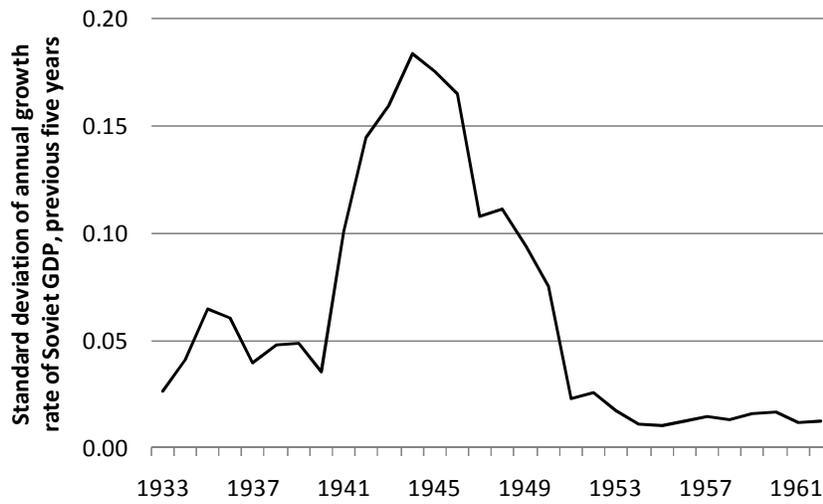
Sources: Soviet GDP, 1928 to 1939 and 1946 to 1962 from Moorsteen and Powell (1966, pp. 622-624); 1940 to 1945 from Harrison (1996, p. 92).

Table 1. Descriptive statistics

	Trials		Party control investigations	
		N =		*N =*
All cases				
Number of cases	59		101	
Of which, not proven	0		13	
First offense (year)	1943		1943	
Last offense (year)	1947		1962	
Proven cases				
Number of cases	59		88	
Location				
Mean distance from Moscow, km	1,675	*59*	807	*85*
Standard deviation	1,105		836	
By branch, percent				
Agriculture and food distribution	47%	*28*	33%	*29*
Construction	12%	*7*	11%	*10*
Industry	34%	*20*	51%	*45*
Timber	7%	*4*	1%	*1*
Transport	0%	*0*	3%	*3*
Accused persons				
Total number	163		454	
Of which, female	12		4	
Mean number per case	2.76		5.16	
Standard deviation	2.16		10.55	
Percent of accused				
Supplier	83%	*135*	67%	*306*
Supplier's internal party committee	0%	*0*	4%	*18*
Supplier's superior:				
Local party organization	1%	*2*	10%	*45*
Local government organization	4%	*7*	9%	*40*
Ministerial administration	0%	*0*	2%	*7*
Buyer	12%	*19*	8%	*38*
Public loss				
Duration of fraud, months	...		7.6	*68*
Standard deviation	...		6.5	
Mean percent of plan	25%	*10*	22%	*29*
Standard deviation	24%		18%	
Mean value in '000 rubles	124.2	*29*	1,675.0	*46*
Standard deviation	271.8		3,418.9	
Private gain				
Mean value in '000 rubles	79.9	*20*	171.4	*11*
Standard deviation	98.7		328.4	

Sources: Appendices 1, 2, and 3.

Table 2. Trials and party control cases distributed by distance from Moscow

Population quintile, km from Moscow	Percent of cases drawn from each population quintile	
	Trials	Party control cases
0 to 555	8.5	50.6
556 to 830	23.7	14.5
831 to 1,145	10.2	9.6
1,146 to 1,980	22.0	18.1
1,981 to 6,850	35.6	7.2
Total	100	100

Source and notes: Trials and party control investigations, listed in appendices 1 and 2, are allocated to the 150 provinces into which the Soviet 1959 census divided the country, listed in Appendix 4 with populations and distances from the provincial centre to the centre of Moscow.

Table 3. Managers' positions relative to plan constraints and risks

	Position in $t = 0$	Position over all t	Risk: Own supply and plan shocks	Insider defection	Buyer's plan shock	Outsider defection	Correlated risk
Compliance	$x = \pi$	$\Sigma x = \Sigma \pi$	x				
Self-insurance	$x + h = \pi$	$\Sigma x = \Sigma \pi$	x	x			
Co-insurance	$x + w = \pi$	$\Sigma x = \Sigma \pi$	x	x	x		
Simple fraud	$x + f = \pi$	$\Sigma x + f = \Sigma \pi$	x	x	x	x	
Joint ventures	$x + c = \pi$	$\Sigma x + c = \Sigma \pi$	x	x		x	x

Note: t is the time period, x is real output, π is the plan, and a plan shortfall could be made up deceptively from h (hidden reserves), w (work in progress), f (simple frauds), or c (cash based buy-backs or carousel frauds). The manager's intra-firm network is termed "inside"; the manager's "outside" network is made up by buyers and ministerial and territorial superiors. "Correlated risk" is the risk to one agent that is created by aggregate effects when others follow the same strategy.

Table 4. Classes of plan fraud under party control: Frequency and attributes

	Self-insured	Co-insured	Simple frauds	Joint ventures	Un-defined
Total number	5	21	15	23	31
Percent in agriculture	20	0	20	96	19
Fraud in percent of plan-year	3	7	17	18	8
N =	1	12	4	9	4
Fraud in '000 rubles	343	1,865	1,841	2,316	334
N =	1	11	11	18	10
Private gain in '000 rubles	59	196	541	…	24
N =	2	3	2	0	4
Percent combined with other offenses	100	29	67	17	52

Sources: Appendix 2. Fraud types are defined in the text. Totals sum to more than 100% because some cases involved more than one type of offense. "Fraud in percent of plan year" is calculated as percent of plan multiplied by duration of fraud in years or fractions of a year.

Table 5. Plan frauds distributed by loss to the state

	Trials		Party investigations	
Percentile	Percent of plan	Thousand rubles	Percent of plan	Thousand rubles
100	70.0	1,377	64.5	16,000
95	63.7	428	54.1	10,418
90	57.4	353	49.6	4,167
50	22.3	20	15.7	329
10	**1.7**	**2.4**	3.4	24
5	1.0	0.2	**1.6**	**12**
0	0.4	0.2	1.1	3.4

Source: Appendices 1, 2, and 3.

Table 6. Trial cases: Marginal effects on sentence in jail years

	Average sentence			Maximum sentence		
	(1)	(2)	(3)	(4)	(5)	(6)
Accused	0.432**	0.353*	0.419*	1.11***	0.865***	1.09***
Ln(*distance*)	0.858**	1.06***		0.055	0.271	
Russia	-0.668		-1.26**	-1.88***		-1.91***
Xplan	0.060**	0.058**	0.046	0.062	0.050	0.061
Xloss	0.016	0.014	0.013	0.014	0.010	0.014
Xgain	-0.044	-0.057	-0.022	0.079*	0.077	0.079*
Controls for missing *X*s?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	50	50	50	58	58	58
Censored < 0	9	9	9	9	9	9
Censored > 10				11	11	11

Sources and notes: Units of observation are trials listed in Appendix 1. The dependent variable is, for sole offenders, the jail term given in years or, for multiple offenders, the average of all the jail terms given out. Other variables are defined in the text and more fully in Appendix 5. Regression data and log files are available from TBC.

Significance, based on robust standard errors: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.